# The Improvement of Organisational Performance and Healthcare Service Delivery through Knowledge Management Practices in the Gauteng Department of Health

By

**Kgabo Hendrik Badimo**

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**Supervisor: Professor Sheryl Buckley**

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**ABSTRACT**

This research was instigated by testimony of the failure and the subsequent crisis in the South African public healthcare system. Official investigations had brought to light alarming operational deficiencies in institutions under the aegis of the Gauteng Department of Health. The South African public sector and government departments, in general, are currently challenged by a complex transformation process which has a prime objective to ameliorate public accountability, service delivery and budgetary control. They are likewise faced with the equally labyrinthine and demanding task of establishing a public-sector organisation with meaningful and effective operational processes that are, in addition, expected to synchronise with the modern economy. The researcher is unequivocal: the success of the GDH in responding to the challenges of improving organisational performance and healthcare service delivery depends essentially on their knowledge management strategy.

Knowledge, across public-sector organisations, is increasingly being acknowledged, not only as a strategic resource but also as a valuable organisational asset. In the context of this research, knowledge is defined as the experience that resides in the minds of people; termed tacit knowledge (as opposed to formal, codified or explicit knowledge). In an analogous manner, research studies abound with evidence that has identified knowledge management as having an influence on operational performance for healthcare service delivery. Yet, a brief inquest indicated that our overall understanding of the existence of the relationship between knowledge management and operational performance for healthcare service delivery in the South African public sector is, at best, exiguous.

With these appraisals in mind, the researcher developed a theoretical model that revealed factors that could influence organisational performance and healthcare service delivery. The model focused on knowledge management capabilities and organisational performance. The prime objective was to operationalise the theoretically derived knowledge management capabilities constructs, identify statistically the enhancing or impeding factors that impact on organisational performance and develop a structural equation model to verify this theoretical paradigm.

The ambition of this study was similarly to investigate the use of knowledge management by the Gauteng Department of Health for its transformation to achieve improved organisational performance and healthcare service delivery. This study in essence addressed four research questions: Firstly, what was the level of understanding of knowledge management in the Gauteng Department of Health and related healthcare facilities? Secondly, how were knowledge management strategies and practices aligned with the Gauteng Department of Health strategies and operational objectives? Thirdly, how was knowledge management used by the employees in the Gauteng Department of Health? and fourthly, how could the results of the literature review and the empirical data be used to create a knowledge-management culture and a collaborative working environment for the Gauteng Department of Health? The elemental, hypothesised pursuit governing the study was to determine the existence of a relationship between the use of knowledge management and an improvement in organisational performance and healthcare service delivery. Collaterally, what enabling environment would be instituted by the gatekeepers of the institutional praxes to capacitate other staff members specifically so as to include the succession planning conundrum?

To accomplish this and after reviewing the literature, the effective factors in knowledge management were identified, namely, knowledge infrastructure proficiencies and knowledge process capabilities. The research followed the parallel mixed-methods approach in gathering and analysing research data. Data was collected using questionnaires with 496 respondents and interviews with 35 interviewees. The sample used in this study comprised employees of the Gauteng Department of Health and its regional healthcare centres. The survey respondents and interview participants were the general staff and executive/senior managers of the Gauteng Department of Health. These individuals were considered to possess the most comprehensive knowledge about their organisation’s characteristics and strategy, which included knowledge management adoption.

In order to identify the relationships between the model elements, appropriate tests were initiated using the Statistical Package for Social Sciences. Exploratory and confirmatory factor analyses and structural equation modelling were utilised and the

proposed model was then extracted and content analysis was applied in evaluating the resulting qualitative data.

The findings of this study furthermore indicated that knowledge management concepts were not universally understood in the Gauteng Department of Health. A structural equation model development strategy, postulated in the factor analysis, also produced a new best-fitting knowledge management capability model based on the new constructs. The structural equation model suggested that significant factors influencing the improvement of the organisational performance and healthcare service delivery are those of knowledge management capability. The regression analysis showed that most of the inter-correlations were significant, thus confirming the theory that knowledge management capabilities have a direct influence on organisational performance and healthcare service delivery.

The research contributed theoretically to a comprehensive understanding of the relationship between knowledge management principles and factors that influence organisational performance and healthcare service delivery. Practically, the research contributed to confirming the use of knowledge management by the Gauteng Department of Health could to the improvement of its overall organisational performance and healthcare service delivery. The study further demonstrated the impact of knowledge management activities as a driving force for organisational change and the effect of knowledge management on the improvement of workforce productivity and organisational effectiveness. The new knowledge management capability model could additionally assist the Gauteng Department of Health determining the extent to which knowledge management is used and where to focus in developing and implementing knowledge management strategy. The study encourages practitioners to take cognisance of the fact that organisations are unique and that the factors which enhance or impede knowledge management are to be thoroughly examined.

This case study was endorsed for its significant contribution to regional healthcare system, as well as the broader national healthcare structure.

**ACKNOWLEDGEMENTS**

The completion of this study has not been an easy task owing to the fact that I had to work and meet family responsibilities at the same time. However, the assistance I received from various institutions and individuals considerably eased my burden. I would therefore like to take this opportunity of thanking GOD for blessing me with this endeavour and giving me the strength to persevere through this journey. I would also like to express my gratitude to all those who, in one way or another, facilitated the completion of this work.

From the formative stages of this thesis to the final draft, I owe an immense debt of profound gratitude to my supervisor, Professor Sheryl Buckley (Director: School of Computing in the College of Science, Engineering and Technology at UNISA), for providing academic supervision and guidance during the entire period of study. I sincerely appreciate Professor Buckley's prompt, insightful, clear and frank feedback; her foresight in identifying values, shortcomings and obstacles; her aptitude for putting ideas into context; her extraordinary attention to details; and, above all else, for being patient and understanding. Her wealth of knowledge and experience as well as careful guidance were invaluable as I attempted to organise myself to embark on and actually work with this thesis.

I would also like to thank those at the Gauteng Department of Health who agreed to be interviewed and to participate in the research process, for, without their time and co-operation, this project would not have been possible. For their efforts, support and assistance, special thanks go to Dr Filistea Naude (Librarian), Mrs Estelle de Kock (Postgraduate Liaison), Ms Suwisa Muchengetwa (Statistician).

Finally, I am proud to say that I have produced a Doctoral thesis from one of the greatest universities in the world. It was not easy, straightforward or fun but I persevered and finally completed my studies. I have learnt much academically and understood myself better during these years. I therefore owe myself a big 'thank you and reserved 'congratulations'.

## DEDICATION

> I have walked that long road to freedom. I have tried not to falter; I have made missteps along the way. But I have discovered the secret that after climbing a great hill, one only finds that there are many more hills to climb. I have taken a moment here to rest, to steal a view of the glorious vista that surrounds me, to look back on the distance I have come. But I can rest only for a moment, for with freedom comes responsibilities and I dare not linger, for my long walk is not yet ended
>
> Mandela (1994: 751)

This thesis would be incomplete without mentioning the support and unconditional love given me by my loving daughters, Kopano Badimo, Mapula Badimo, Malope Badimo and Kgabo Badimo Jnr and son Martin Badimo (pillars of strength and friends) and my mother Mapula Florah Badimo, my brothers and sisters and my friends who offered encouragement and inspiration throughout the course of this thesis.

In loving memory of my late wife, Mrs Machuene Nelly Badimo and my late father, Mr Martins Badimo, for the pride and happiness this achievement would have given and for the sheer genuine pride in me as a husband and son.

To all these loving people, this thesis is dedicated.

**DECLARATION**

Student Number: 3516-110-8

I declare that this study “The Improvement of Organisational Performance and Healthcare Service Delivery through Knowledge Management Practices in the Gauteng Department of Health”, is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references. This thesis does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any university.

_____ October 2017

**Signature** **Date**

Kgabo H Badimo

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## ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| AET | Adult education and training |
| AGFI | Adjusted Goodness-of-Fit Index |
| AHPCSA | Allied Health Professions Council of South Africa |
| ANC | African National Congress |
| ANOVA | Analysis of Variance |
| ARV | Anti-retroviral |
| ASEAN | Association of Southeast Asian Nations |
| ASTD | American Society for Training and Development |
| AU | African Union |
| BTS | Bartlett's Test of Sphericity |
| CALS | Centre for Applied Legal Studies |
| CARMMA | Campaign on Accelerated Reduction of Maternal Mortality in Africa |
| CBO | Community-based organisations |
| CCECE | Canadian Conference on Electrical and Computer Engineering |
| CEGAA | Centre for Economic Governance and Aids in AfricaHome |
| CEO | Chief executive officer |
| CFA | Confirmatory factor analysis |
| CFI | Comparative Fit Index |
| CIO | Chief Information officer |
| CoP | Community of practice |
| CR | Critical ratios |
| CREC | College Research & Ethics Committee. |
| CRM | Customer Relationship Management |
| DBSA | Development bank of South Africa |
| DHC | District health councils |
| DoH | Department of Health |
| EBIDTA | Earnings before interest depreciation, tax and amortisation |
| EFA | Exploratory factor analysis |
| EMCIS | European and Mediterranean conference on information systems |
| ERP | Enterprise resource planning |

| | |
|---|---|
| EXCO | Executive committee |
| FBO | Faith-based organisations |
| GDH | Gauteng Department of Health |
| GDP | Gross domestic product |
| GFI | Goodness-of-fit Index |
| GSSC | Gauteng Shared Services Centre |
| HCT | HIV Counselling and Testing |
| HIS | Health information systems |
| HoD | Head of department |
| HPCSA | Health Professions Council of South Africa |
| HR | Human resources |
| HRM | Human resource management |
| HS | Healthcare system |
| HSD | Healthcare Service Delivery |
| IC | Intellectual capital |
| ICT | Information and communication technologies |
| IFI | Incremental Fit Index |
| IRB | Institutional Review Board |
| IT | Information technology |
| KBV | Knowledge-Based View |
| KE | Knowledge Economy |
| KM | Knowledge Management |
| KMO | Kaiser-Meyer-Olkin |
| LO | Learning Organisation |
| MDG | Millennium Development Goals |
| MEC | Member of the Executive Committee |
| MFMA | Municipalities Financial Management Act |
| MRC | Medical Research Council |
| MTEF | Mid-term expenditure framework |
| NDH | National Department of Health |
| NGO | Non-governmental organisation |
| NHIS | National Health Insurance Scheme |
| NHLS | National Health Laboratory Service |
| NPO | Non-profit organisations |

| | |
|---|---|
| NT | National Treasury |
| OC | Organisational Culture |
| OP | Organisational Performance |
| OS | Organisational Structure |
| PBT | Profit before tax |
| PEPFAR | President's Emergency Plan for AIDS Relief |
| PFMA | Public Finance Management Act |
| PHC | Primary healthcare |
| PHCF | Provincial Health Consultative Forum |
| PHCFC | Primary healthcare facility committees |
| PHCTC | Provincial Health Council Technical Committee |
| PMTCT | Prevention of mother-to-child transmission |
| PPRC | Provincial Protocol Review Committee |
| PRHC | Provincial Health Council |
| PSR | Public-sector reform |
| PSRG | Public-sector reform and Governance |
| RMSEA | Root mean square error of approximation |
| ROE | Return on equity |
| ROI | Return on investments |
| RSA | Republic of South Africa |
| SA | South Africa |
| SADC | Southern African Development Community |
| SAHPRA | South African Health Products Regulatory Agency |
| SAHRC | South African Human Rights Commission |
| SALGA | South African Local Government Association |
| SAMA | South African Medical Association |
| SANAC | South African National AIDS Council |
| SATMRU | South African Traditional Medicines Research Unit |
| SD | Standard deviation |
| SECI | Socialisation, Externalisation, Combination and Internalisation Model |
| SEM | Structural equation model |
| SOE | State Owned Enterprises |
| SPSS | Statistical Package for Social Sciences |
| TAC | Treatment Action Campaign |

| | |
|---|---|
| TB | Tuberculosis |
| TQM | Total Quality Management |
| UNISA | University of South Africa |
| WHO | World Health Organisation |
| XDRTB | Extensively Drug-Resistant Tuberculosis |

## DEFINITION OF CONCEPTS

It is imperative at this stage to reflect on the relevant discipline in which the present research problem is rooted. In this regard, the section focuses on a comprehensive definition of the concept of knowledge, knowledge management (KM), organisational performance (OP), healthcare service delivery (HSD), public-sector reform and governance, organisational transformation, a knowledge-based view and a brief overview of the theoretical literature from which the research problem draws its credentials.

It is important to define the meanings of concepts when conducting research, because the concepts and terms used must be understood in terms of the research context, as they form the basis for describing and explaining phenomena and processes in a field of study. The full theoretical background and literature review are set out in the next chapter.

As highlighted in the research objectives, this study is aimed at investigating how the Gauteng Department of Health (GDH) could use knowledge management to improve its OP and HSD. This requires a deeper understanding of the traditional field of study and the theory underpinning knowledge management.

a) Defining knowledge

According to the New Collins Concise Dictionary:

> knowledge is the facts, feelings or experiences known by a person or a group of people. It is considered to be the state of knowing, consciousness or familiarity gained by experience or learning. Knowledge is the result of learning and is stored in an individual brain or encoded in documents.

On the other hand, according to (Dalkir, 2011:8):

> Knowledge is basically the sum of what is known and resides in the intelligence and competence of people and not everything that we know can be codified as documents or tools

The researcher is therefore of the view that while information can be transferred by technology, knowledge on the other hand has the additional human dimension of understanding. Knowledge originates in the mind of an individual and builds on information that is transformed and enriched by personal experience, beliefs, values and assumptions. It is information interpreted by the individual and applied to the purpose for which it is needed. Accordingly, knowledge in the researcher's view, is the mental state of ideas, facts, concepts, data and techniques, recorded in an individual's memory.

In practice, though, there are many possible and equally plausible definitions of knowledge. Debates about the significance of knowledge have continued for thousands of years and seem likely to continue for some time to come. Despite the contrary, pioneers in the field of knowledge (Davenport & Prusak, 2000), pointed out that knowledge exists within people and it is integral to human complexity and unpredictability. The researcher will not attempt to give an ultimate definition of knowledge but chooses to adopt the working definition of knowledge for this study as offered by (Davenport & Prusak, 2000:178):

> Knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices and norms.

Most explanations of knowledge seem to cover the same vocabulary, concepts and terms contained in the definitions above. The study thus addresses the general themes and fundamentals that have become evident in recent years, namely, that knowledge can be created and acquired, knowledge can be transferred and shared, knowledge can be retained, knowledge can be distinguished from data and information

and finally knowledge is usually filtered, stored, retrieved and dispersed across the organisation.

b) Understanding KM

The concept of KM has been defined by many researchers with a view to reflecting its key focus area. The key common factors that come to the fore in most of these definitions are knowledge creation/acquisition, knowledge-sharing/transfer, knowledge retention/storage and knowledge application/use: in other words, the elements of KM. The aforementioned are applied to help the organisation strengthen its competitive advantage and assist knowledge workers to leverage their skills and ability to deliver business value (Al-busaidi, Olfman & Al-busaidi, 2014) This concurs with Harrigan & Dalmia's (1991) theory that knowledge workers are the last bastion of competitive advantage.

These key KM processes appropriately demonstrate that KM is more of a business strategy. It captures the key essence of the organisation in the form of organisational design, processes, structures, applications and technologies (Reddy & Govender, 2014). In this study, KM will reflect the practices of competence development, as well as the organisational practices of identification by the organisation of its intellectual capital, its integration with knowledge that is readily available in the organisation and shared in various forms to enable employees to create value. This would increase organisational focus on collective action (Uriarte, 2008).

This research focusses on how the GDH employs KM principles to create/acquire knowledge, share/transfer knowledge, retain/store knowledge and apply/use the knowledge to enhance OP and healthcare service delivery, thereby creating a continuous competitive advantage in the public-sector. To survive the wave of competition generated by the public-sector reform initiatives, globalisation and the collapse of geographical boundaries, KM will be a judicious option in the public-sector (Baporikar, 2013).

c) Defining Operational performance

In the context of this study, OP is informed by a process of insightful and radical transformation that steers an organisation in a new direction and takes it to an entirely different level of performance and productivity. Transformation implies an organisational change that will result in an entirely different configuration with little or no resemblance to the past organisational structure (OS) and business processes (Mills & Smith, 2011).

Organisations need to occasionally go through a certain degree of transformation because they are increasingly faced with fierce competition, demanding customers, economic pressures and financial crises. New business practices, notably reform in the public-sector, compel organisations to adopt and implement a variety of complex interpretations of information (Mowbray, 2014). To be effective, they have to reduce costs, improve product and service quality and respond rapidly to new opportunities in the marketplace.

The global economy requires organisations to provide cost-effective, high-quality and competitive products and services to customers. As emphasised by Dewah & Mutula (2016), all organisations have access to the same markets and can only succeed through excellence in delivering products and services, or a combination of these that are of the greatest value to its customers (Dewah & Mutula, 2016).

The challenges posed by the global economy make it difficult for some organisations to provide products and services with sufficient margins to remain in the business. To survive and prosper, most organisations need to transform effectively and intelligently if they are to perform well and be productive in the global economy. Governments in particular are facing unprecedented challenges brought about by the emerging knowledge economy, the knowledge society and public-sector reform obliging them to adopt new management practices, such as KM.

In the context of this research, the transformation of the GDH to a service-driven organisation as a strategy of improving OP and HSD must necessarily have knowledge-based resources in place to ensure that healthcare services are effectively

delivered (Sook-Ling, Ismail & Yee-Yen, 2015). This is further emphasised by Nonaka, Kodama & Kohlbacher (2014) and Mills and Smith (2011) where they posited that there should be elaborate support systems for managing expectations associated with efforts to ensure consistent and frequent communication to maintain the perception of improved OP, as well as strong service delivery.

Given the service-driven organisational requirements, the GDH requires a new knowledge-based public administration model, which must adopt the success criteria for OP and service business. This conceptual knowledge-based OP and service delivery model (Figure 1) also identifies knowledge resources and KM processes (Sook-Ling *et al.,* 2015; Moghaddam, Akhavan & Mehralian, 2015; Nonaka *et al.,* 2014).

This model requires certain success factors that should be taken into consideration in enhancing KM and the use of KM for OP and service delivery. These will include factors such as information technology, OS and organisational culture (OC) (Pandey & Dutta, 2013).

In order to leverage the conceptual knowledge-based OP and service delivery model, KM processes must also be present in order to apply knowledge throughout the organisation and provide a conceptual model for defining the process aspects of KM integration in the organisation (Ekionea, Fillion, Plaisent & Bernard, 2011).

According to (Gold, Malthora & Segars, 2001), this conceptual model shows that the integration of KM infrastructure and processes depends on how frequently an organisation carries out its KM activities, the variety of knowledge integrated through the presence of requisite processes and the manner in which an organisation can apply its knowledge.

To strengthen and assess the OP and service delivery at the GDH, this conceptual model also engages the simultaneous interaction of infrastructure capability (technology, structure and culture) and knowledge process capability (acquisition, conversion, application and protection) (Figure 1)

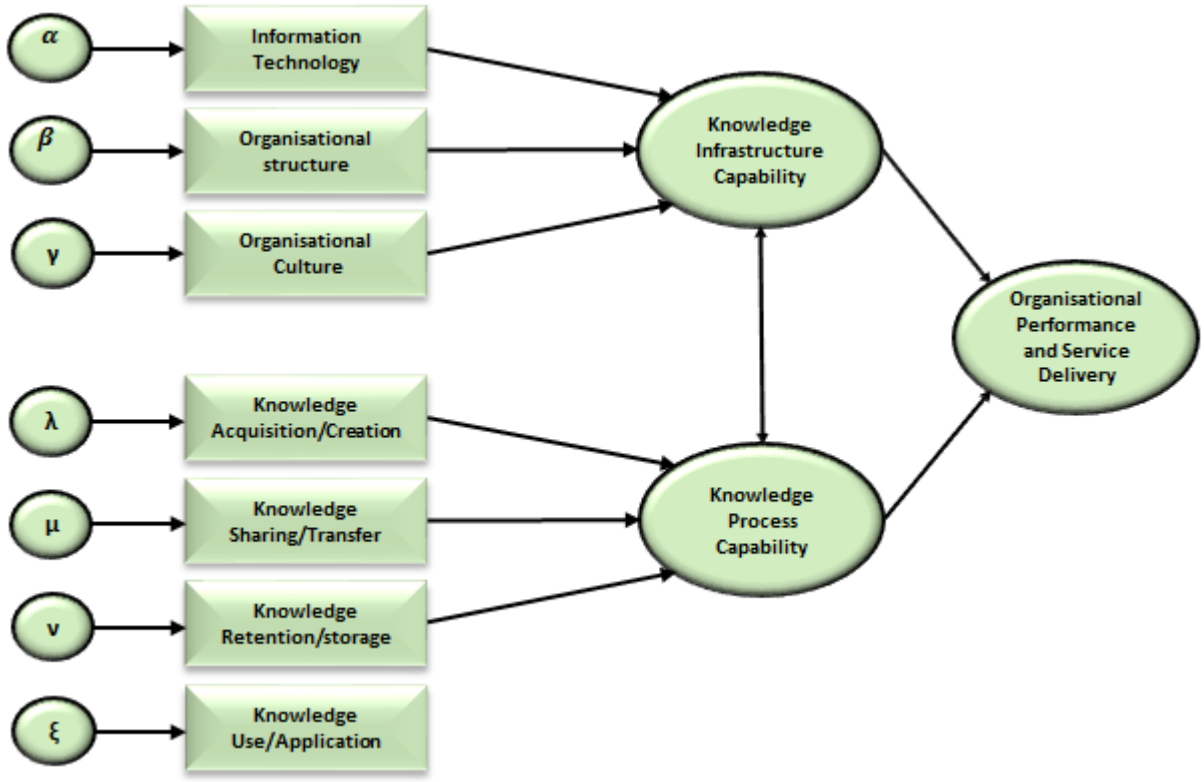



Figure 1: Knowledge-based performance and service delivery model.
Source: Knowledge Management: An Organisational Capability Perspective (Gold et al., 2001:193).

The OP approach adopted here is that of the endeavour to effect change by codifying and classifying knowledge and creating an environment for knowledge creation, sharing, retention and using, the idea being to balance both the content of organisational knowledge (tacit and explicit) and capabilities to leverage knowledge (infrastructure and process). This is clearly demonstrated by Ekionea *et al.* (2011), as he argues that both infrastructure and process capabilities predict OP and service delivery.

d) Defining Healthcare service delivery

HSD from the declaration of Alma-Ata (1978) is defined as “Essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-

determination" (World Health Organisation, 2013). Gupta, (2016:38) takes a practical definition focusing mainly on the patients' expectation, what is delivered and by whom and thus defines HSD as "the prevention, treatment and management of illness and the preservation of mental and physical well-being through the services offered by the medical and allied health professions". Other authors additional provide different definitions of HSD depending on their views of how it is to be implemented.

Given the different approaches to defining HSD, the researcher adopted the approach of examining the key elements of achieving quality HSD, which are those of reducing exclusion and social disparities in health, organising healthcare services around people's needs and expectations (service delivery), integrating health into all the sectors of the public service (public-sector reforms), pursuing collaborative models of policy dialogue (leadership reforms) and increasing stakeholder participation (KM).

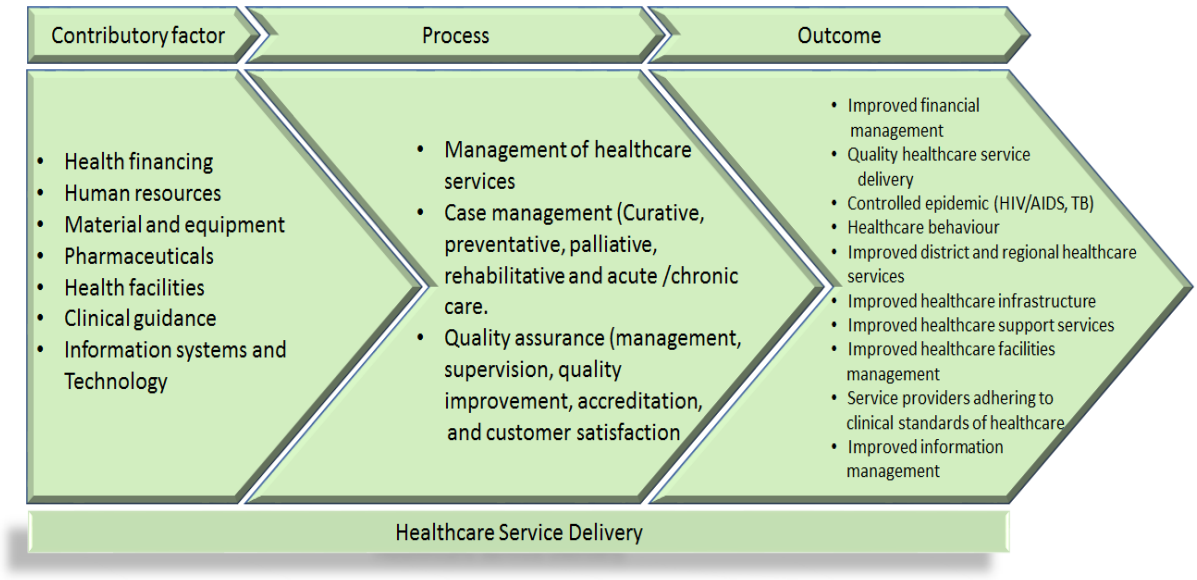



Figure 2: Systematic View of Healthcare Service Delivery

The HSD definition endorsed for this study is therefore the manner in which the various contributory factors are combined to allow the delivery of healthcare actions. If it is to perform, HSD is the chief function that the health system absolutely requires. As such, the researcher has created the model (Figure 2) to illustrate the relationship between contributory factors, namely, financial resources, competent healthcare staff, adequate physical facilities and equipment, essential medicines and supplies, clinical

guidelines and operational policies which are crucial to informing the processes and outcomes.

e) Defining public-sector reform and governance

A basic definition of public-sector reform (Brinkerhoff & Brinkerhoff, 2015:225) is as follows:

> Public-sector reform (PSR) is about strengthening the way that the public-sector is managed. The public-sector may be overextended – attempting to do too much with too few resources. It may be poorly organised; its decision-making processes may be irrational; staff may be mismanaged; accountability may be weak; public programs may be poorly designed and public services poorly delivered. PSR is the attempt to fix these problems.

The shortcomings in the public-sector are well-documented and have, in the past few years, been openly acknowledged by the government (De la Porte, 2016). Both the African National Congress (ANC) and the government have made it clear that the improvement of the public health sector is a necessary condition for the success of the National Health Insurance Scheme (NHIS). However, it is possible that the Department of Health's (DOH) 10-point plan for 2009-14 and their Strategic Plan for 2010-12 underestimated the challenges. It bears repeating that the public-health sector employs over a quarter of a million people in over 4 300 establishments (CDE, 2011).

Given the well-documented demerits of the government's efforts, namely, poor standard of infrastructure, the skills shortages, the poor staff attitudes, the low levels of patient satisfaction and incompetent management that, indeed, characterise much of the public-sector. Additionally, by the government's own admission, turning around an establishment of this size, considering the nature of the public health-sector's own resources, would be difficult.

According to the Development Bank of South Africa (DBSA) Roadmap, based on 2008 data, the public-sector is short of between 60 000 and 84 000 health professionals.

South Africa's existing resources indicate that there is no hope of speedily improving this shortfall. Again, according to the DOH, the internal training capacity for doctors increased from just over 1 100 graduates in 2000 to 1 309 in 2008. Regrettably, many of these graduates emigrate. An obvious solution is to embark on a vigorous recruitment program targeting foreign health professionals.

Alas, the DOH's most recent human resources document went no further than a rewriting of the legislation and new management processes on recruitment and retention of foreign-trained health professionals are required. DoH (2012) indicates the same view and moreover indicates they did this without any practical fulfilment of their promises.

According to Econex (2010), the private sector represents a significant reservoir of human resources. Between 6 500 and 7 000 general practitioners are working in the private sector, along with between 5 000 and 5 500 specialists. The corresponding numbers for the public-sector are between 10 700 and 11 300 general practitioners and between 4 000 and 4 400 specialists. When it comes to nurses, the figures are 104 000 in the public-sector and 40 000 in the private sector. Nothing short of taking over the private sector lock, stock and barrel – a practical impossibility – the challenge is to find public-sector reform strategies that broaden access to this reservoir.

In the context of this study, therefore, public-sector reform and good governance are analysed as management and public administration concepts, with emphasis on accountability and responsiveness to customer needs. Good governance implies, in particular, a public service that is efficient and an administration that is accountable to the public.

The four elements of public-sector reform and good governance will include public-sector management, emphasising the need for effective financial and HRM through improved budgeting, accounting and reporting; rooting out inefficiencies; accountability and making public officials responsible for their actions and responsive to consumers; and, availability of information and transparency in order to enhance policy analysis and promote public debate (Brinkerhoff & Brinkerhoff, 2015).

Public-sector reforms and good governance are also a central feature of economic policy reform. However, the institution of such reforms in South Africa remains hindered by problems such as inefficiency, lack of accountability, ineffective management practices and corruption. Most of the public-sector reform programs that have taken place in South Africa since 1994 have been driven by a combination of economic, social, political and technological factors (Kaiser & Streatfeild, 2016). These have triggered the quest for efficiency and for ways of reducing the cost of delivering public services and increasing the emphasis on good governance. Improved service delivery and efficiency are now undoubtedly the overriding aims of the South African public-sector reforms.

In the context of this research and in relation to the research question, it was evident that the key components of an enabling context include public-sector reform and good governance to improve HSD and OP (Brinkerhoff & Brinkerhoff, 2015).

Public-sector reform and good governance have been major themes in South Africa since the advent of democracy in the country. Improved efficiency is now the overriding aim of reforms in South Africa. The public-sector reform concept is drawn from a study and interpretation of the various government transformation policies and, given the significance that service delivery challenges have for the country, remains relevant in South Africa today, particularly in the healthcare sector.

Good governance, as advocated by the public-sector reform framework, addresses the responsibilities of the GDH to create an environment in which human activity can benefit society and focuses on management and administrative components of good governance, thereby improving OP and HSD in Gauteng.

f) Examining the knowledge-based view

The concept of KM as defined in this research points to the importance of knowledge in improving both the knowledge workers' productivity and OP as a whole. It is a special strategic resource that could generate increasing returns. Grant (2015) further confirms that knowledge and information have become the underlying sources of competitive advantage to the knowledge-based perspective of an organisation.

For the purpose of this study, organisational knowledge-based perspective was therefore understood as the accumulated knowledge and the learning capabilities of an organisation. This is the organisational ability to create knowledge by means of a process of dynamic interaction between tacit and explicit knowledge for knowledge and service workers in order to improve the organisation's productivity

A knowledge-based view thus focuses on knowledge as the most strategically important resource of the organisation and argues that knowledge resources are particularly important in ensuring that competitive advantages are sustainable (Sook-Ling *et al.,* 2015).

This study was aligned with the emphasis by the knowledge-based view on adding competitive value to HSD and OP by applying human expertise (Evans, Brown & Baker, 2015). KM has been credited with providing an avenue for the development of human expertise through knowledge creation, sharing, retention and application. As a result, one important knowledge-based perspective of the GDH proposition is that the organisation exists to create, transfer, share, use and transform knowledge into competitive advantage.

This study took the view that the order of transformation of the GDH for improved OP and HSD is driven by its knowledge-based view. In the information era, life is not determined by an abundance of natural resources (Evans *et al.,* 2015). Instead, knowledge is paramount and knowledge-based competition will be crucial for the GDH's success in the coming years.

Among the more recent authors on the subject are Felin and Hesterly (2007), Wenger (2011), Takeuchi (2013) and recently Grant (2015), Handzic, Ozlen & Durmic (2016) concur that the new economy will be driven by a knowledge-based view. Consequently, it will be influenced by knowledge, which by nature is intangible but will be its main input. There will therefore be an economy of intangibles. Economic reform will be required, with the inevitable impact on public-sector reform and public administration for service delivery (Cong, Li-Hua & Stonehouse, 2007).

g) Defining Organisational culture

It is important to study the OC, as it impacts on the flow of knowledge through the organisation itself and the willingness of its members to share and re-use knowledge (Digan, 2015). Thus, OC is the collective perceptions, beliefs and values of employees in the workplace. Further, Corfield & Paton, (2016) believes that organisations should be studied in their own cultural context.

This study showed that OC determines the values and beliefs which are integral to what employees choose to see and absorb. It, therefore, includes the shared perceptions of the reality of how things are and how things should be. Al-Bahussin and El-garaihy (2013) supported recently by Handzic & Durmic (2015) and Corfield & Paton, (2016) noted that OC includes artefacts (processes, structures, goals, climate and dress code), espoused values (the values espoused by the leaders) and assumptions which is the tacit views of the world itself.

If knowledge creation, knowledge transfer, knowledge retention and knowledge use are to work effectively, there must exist a knowledge-sharing culture in an organisation (Digan, 2015). If KM initiatives are to function, the employees must be willing to share their knowledge with others. A knowledge-supporting OC is thus one of the most important conditions for ensuring an efficient flow of knowledge among the members of the organisation (Said, 2015; Zahidul, Sajjid & Ikramul, 2015).

In any organisation, staff departures due to resignations or natural attrition are inevitable, alas they also suggest a loss of knowledge. The most effective means of managing the loss of knowledge is maintaining the knowledge-sharing/transfer culture, wherein knowledge creation, sharing, retention and application. This should be an aspect of every employee's daily activity (Zahidul *et al.,* 2015).

Consequently, OC plays an important role in motivating employees to create, share, retain and apply their knowledge, especially in an environment where knowledge is constantly changing. Thus, an OC that is characterised by fear results in employees repeating past mistakes and feeling that sharing knowledge is going to lead them to a

point where the company will have no further use for them (Wiewiora, 2011; Peralta & Saldanha, 2014; Al-busaidi *et al.,* 2014).

Generally speaking, knowledge-sharing activities are dependent on OC (Aboelmaged, 2014). In today's business world, knowledge is considered to be a vital resource in creating an appropriate competitive advantage for the organisation. It ensures improved OP and service delivery. This makes it desirable for organisations to encourage an environment in which a proper knowledge flow can be ensured.

h) Defining learning organisation

The literature describes a learning organisation as an entity that purposefully and continuously acquires processes and disseminates knowledge in order to transform itself (Zaied, Hussein & Hassan, 2012). It is one in which individuals and teams can seek out and act upon the best information and knowledge available in order to increase individual, team and organisational competence. It is also an organisation in which people continually expand their capacity to create the results they truly desire and in which new and expansive patterns of thinking are nurtured, collective aspiration is set free, where people are continually learning how to learn together (Žemaitis, 2014; Zaied *et al.,* 2012).

In the context of this study, a learning organisation was defined as one that enables its members to learn in such a way that it creates positive outcomes, such as innovation, efficiency, improved alignment with the environment and competitive advantage. Through training, workshops and seminars, employees learn and acquire new skills and knowledge and the members are transformed.

Despite various challenges, the GDH attempts to equip its employees with the necessary knowledge through learning, training, attendance at workshops, seminars, discussions and other events. Organisational learning is an important aspect that must be addressed with regard to using KM strategies for improvement in OP and HSD.

i) Defining knowledge economy

Economics experts disagree as to whether a knowledge economy actually exists (Tocan, 2012). Pandey and Dutta (2013) describes it as an economy in which knowledge is applied, not to the nature of natural resources but to nature itself. Antonelli and Fassio (2016) defines it as an economy directly based on the production, distribution and use of knowledge and information, while Amavilah, Asongu, Simplice and Andrés (2014) describe the knowledge economy as production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advances as well as equally rapid obsolescence.

Veselá and Klimová (2014) observed that all these definitions seem to share the aspect that in the knowledge economy, one finds a much larger focus on knowledge than on physical labour or natural resources. The means of production has changed from physical labour to the human mind. This was summarised by (Tocan, 2012) when he noted that the technicians own their means of production - the knowledge, the organisation only owns the tools of production. The two need each other. This means, in effect, that the rise of the knowledge-worker comes with the fall of the blue-collar worker (Reddy & Govender, 2014)

The researcher took cognisance of all these definitions and understood that a knowledge economy is one that depends on knowledge for growth and development and is supported with superior high-quality services through a knowledge workforce. This view is supported by the observations of Muzondo and Ondari-Okemwa (2015:2) who state that “the landscape of knowledge production seems to be changing rapidly and think tanks are emerging as major players in knowledge production” and the emerging knowledge society and knowledge economy will be radically different from the society and economy of the late 20th century. This understanding is shared by Ngah and Ibrahim (2010), who accept that in a knowledge-based economy, knowledge resources, as opposed to natural resources, are the critical element that determines the success of an organisation. In the 21st century, the knowledge factor is at the apogee of running an organisation and the vision of a knowledge-based economy reflects the differences that separate the world economy today from that of a century earlier (Antonelli & Fassio, 2016).

It is therefore imperative for the GDH to implement KM and to manage, share and retain the knowledge that they create and acquire. The knowledge economy relies on the diffusion and use of information and knowledge. Knowledge, after all, is a key tool in gaining competitive advantage for enterprises in the knowledge-based economy (Antonelli & Fassio, 2016).

In the context of this knowledge economy, the GDH is facing dynamic competition and rapid changes in the local and global market, so it has to emphasise all the elements of knowledge in order to accelerate improvement in OP and HSD. All this goes to meeting the needs of the Gauteng citizenry (Amavilah *et al.,* 2014; Antonelli & Fassio, 2016). A knowledge economy is therefore one in which knowledge is the most critical asset to be retained by GDH so that they use it to improve their OP and the quality of HSD.

# CHAPTER ONE: INTRODUCTION

> Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less.
>
> Marie Curie (1867 – 1934): As quoted in *Our Precarious Habitat* (1973) by Melvin A. Benarde, p. v

## 1.1. Introduction

Knowledge is increasingly being recognised by many searchers as a critical economic resource, surpassing even the traditional assets of capital, labour and land. A similar viewpoint was recently advanced by (Chen, 2016) when he posited that knowledge is the most important economic resource of future society. This is with particular reference to tacit knowledge and experience that resides in the minds of people. Their 'know how" and its transmission often abstruse. As a result of this growing acknowledgement and awareness, organisations are realising, albeit slowly, the commitment to appreciate knowledge management (KM) (knowledge creation/acquisition, knowledge-sharing/transfer, knowledge retention/storage and knowledge application/use). These KM practices are applied to assist organisations to strengthen their competitive advantage and assist knowledge workers to leverage their skills and ability to deliver business value.

As noted by Odine (2015) and Weeks (2014) it is only latterly that KM has been receiving attention by the public healthcare sector. This is in part due to the ever-growing quantities of information that healthcare practitioners have to handle. It thus became essential to develop a method for managing the information entering and leaving a healthcare organisation.

The present study was inspired by the growing concern over the poor performance of the South African public HS including poor healthcare service delivery (HSD) in all South African provinces, particularly Gauteng (GDH, 2014; GDH, 2013; GDHSD, 2009). This concern was raised as well in the "Monitoring our Health: Analysis of the breakdown of healthcare services in selected Gauteng facilities" Report (GDH, 2014; GDH, 2013; GDHSD, 2009) which states that "over the last few years there has been

a sharp deterioration in healthcare at hospitals and clinics in Gauteng, marked by shortages of healthcare professionals, shortage of medicines, collapsing infrastructure, broken equipment, inadequate provision of stationery and misuse and misallocation of funds". This was further supported by the recent deaths of 94 mentally ill patients in Gauteng as reported by the health ombudsman's: "Circumstances surrounding the deaths of mentally ill patients: Gauteng Province" (Makgoba, 2017).

Geographical variations in healthcare utilisation can perpetuate health disparities. This is evidenced by wide variations in healthcare utilisation and health outcomes across the provinces of South Africa. This dysfunction in Gauteng stems from the cumulative impact of the burden of diseases, economic pressures, population surges and policy and other strategy incoherencies. As highlighted above, over the last few years, there has been a sharp deterioration in healthcare at hospitals and clinics in Gauteng. This has led to a situation in which the access to health care services and patients' dignities is compromised on a daily basis.

Gauteng is the most populous province in South Africa, accounting for over 22% of the national population. It is likewise economically the most prosperous and urbanised. It is better resourced and as a result has superior health and development indicators compared with the other South African provinces. However, of the 12.3 million people living in Gauteng, at least 7.7 million do not have comprehensive medical aid cover and under the circumstance depend on state facilities to meet the majority of their healthcare needs (StatsSA, 2016).

The first quarter 2011 report of The South Africa Development Index, published by The South African Institute of Race Relations (Ndhlovu, 2012) on a health status survey of the Gauteng province, shows an increment in HIV infections and infant mortality coupled to a decline in female life expectancy. Among these, Gauteng represented 19.4% of the SA population afflicted with HIV/AIDS.

These shortcomings have been widely acknowledged and there have been periodic episodes in which healthcare in Gauteng has been brought under intense public scrutiny. Examples include the photographs of new-born babies in hospital lying in cardboard boxes due to overcrowding and lack of suitable beds. There were also

reports on the deaths of 6 babies at Charlotte Maxeke Johannesburg Academic Hospital in 2010, as a consequence of the outbreak of gastroenteritis and cases of avoidable stillbirths in the labour ward at Chris Hani Baragwanath Academic Hospital because of a shortage of nursing staff (Gray & Vawda, 2015).

According to the GDH (2014) and Weeks (2014), this dismal state and the causal-effects of this sub-minimal performance, subsumes inequitable healthcare spending, healthcare professionals who are poorly equipped with knowledge for knowledge workers, deficient leadership, shoddy decision-making, mediocre accountability and fiscal discipline, inability to translate policy to practice, patients' dissatisfaction, waste of resources and the lack of integrated information systems.

On these grounds, there are compelling reasons why the Gauteng Department of Health (GDH) might need to consider a KM initiative.
These include:

- Helping to prevent the possible loss of knowledge when someone quits the organisation (death, turnover and retirement)
- To gain a greater competitive advantage
- To address negative findings discovered during audits and reports from various task teams; to create a continuous learning organisation
- To improve OP and
- To increase the quality of healthcare services delivery

Although specific reasons may vary from one provincial government department to another, Chen and Mohamed (2008) agreed with Chang and Chuang (2011) that there was a general consensus that KM could contribute to the improvement of these categories of organisations. This view was also supported by Zaied *et al.* (2012), Tseng and Wu (2012) and Mills and Smith (2011) in that KM could furthermore address an array of intra-departmental problems and challenges.

This persuaded the researcher to conduct a study on the utilisation of KM strategies for "The Improvement of OP and HSD through KM Practices in the GDH". The

researcher had reason to believe that because of retirement and poor OP, the GDH had been losing critical knowledge, with employees and their professional skills moving on to new jobs, retiring and leaving the provincial department. When employees leave, the GDH loses a tremendous amount of valuable knowledge and this despite the fact that it is the most critical asset being managed (Nazari, 2014).

### 1.1.1. National (public and private) healthcare sector

South Africa's health system consists of a large public-sector and a smaller but fast-growing private sector. Healthcare in South Africa varies from the most basic public healthcare (PHC), offered freely by the state, to highly specialised, hi-tech health services available in both the public and private sectors.

Table 1: South African Healthcare Key Indicators

| **Key indicators** | |
|---|---|
| Population (2014) | 53.7 million |
| Per capita GDP (2015, constant USD | $5,784 |
| Income group | Upper-middle |
| **Health financing (2013)** | |
| THE per capita (USD) | $593 |
| THE as % of GDP | 8.9% |
| GHE as % of THE | 48.4% |
| GHE as % of GGE | 14.0% |
| OPP as a % of THE | 7.1% |
| DAH as a % of THE | 1.8% |
| Pooled private as % of THE | 51.6% |

Source: WHO (2013), CEGAA (2013) and PEPFAR (2016)

Furthermore, South Africa’s annual healthcare bill amounts to approximately R85 billion.

While the state contributes about 50% of all the expenditure on health, which is 8.9% of GDP (Table 1), the public health sector is under pressure to deliver services to about 80% (43, 592,000) of the population (Table 1). The private sector, on the other hand, is run largely on commercial lines and caters for middle- and high-income earners,

most of whom are members of a medical scheme. It also attracts most of the country's highly qualified health professionals.

South Africa has 83 private medical aid schemes that fund health services for about 16% of the population; they include formal sector workers and, in some cases, their dependents (GD, 2014). The remainder of the population - informal sector employees, the unemployed and the poor - relies on tax-funded health services.

Table 1 shows that Government health expenditure (GHE) as a percentage of total health expenditure (THE) increased from 39.9% in 2006 to 48.4% in 2013. External resources decreased from 2.3% to 1.8% of THE over the same period. Out-of-pocket (OOP) expenditures have been decreasing over the years. The total expenditure on health was US$23 billion (current exchange rate) in 2015, which represented about 8.6% of GDP (GDH, 2015).

a) Expenditure

The bulk of health sector funding emanates from South Africa's National Treasury. According to the 2011 National Treasury's Fiscal Review, the health budget for 2012/13 was R121 billion. This bill essentially targeted improving hospitals and strengthening public health ahead of the introduction of National Health Insurance Scheme (NHIS).

In 2011, the total spending on health was R248.6 billion – or approximately 8.3% of the gross domestic product (GDP), which far exceeded the 5% recommended by the World Health Organisation (Dieleman, Templin, Sadat, Reidy, Chapin, Foreman, Haakenstad, Evans, Murray & Kurowski, 2016). Despite this high expenditure, health outcomes, in comparison with those in similar middle-income countries, remained mediocre. This could be largely attributed to the inequities between the public and private sectors. A further challenge due to its high cost was the implementation of National Health Insurance (NHI) whose cost is estimated to be a total of US$16.5 billion per year by 2025 (current exchange rate) (GDH, 2015).

For FY 2016/17, the government has projected to contribute additional funds to its HIV endeavour where an estimated 82.9% of funding will come from the government, 3.8% from the Global Fund to Fight AIDS, TB and Malaria. According to the 2011 National Treasury's Fiscal Review, the GDP spending on health was apportioned as follows:

- R120.8 billion (48.5%) in the private sector.
- R122.4 million (49.2%) in the public sector.
- The remaining R5.3 billion (2.3%) consists of donor and non-governmental organisation (NGO) spending.

The DoH holds overall responsibility for healthcare, with a specific responsibility for the public-sector. Provincial health departments provide and manage comprehensive health services, based on a district-based, public healthcare model. To facilitate faster responses to local needs, local hospital management has delegated authority over operational issues, such as the budget and human resources. According to Dieleman *et al.,* (2016) public health consumes about 11% of the government's total budget, which is allocated to all the nine provinces.

According to the Council for Medical Schemes, there are more than 110 registered medical schemes in South Africa, which have 3.4 million principal members (and 7.8 million beneficiaries). Hundreds of NGOs make an essential contribution to dealing with HIV/AIDS and TB, mental health, cancer, disability and the development of public health systems. The part played by NGOs is vitally important to the functioning of the overall HS.

Over the past four years, PEPFAR has provided grants to the value of $856.8 million to support AIDS related prevention and treatment in South Africa (Health systems 20/20, 2012). The majority of this funding has been channelled through private sector organisations that often provide support to provinces through public-private initiatives (PPIs). Since it began supporting the country efforts, in 2003, PEPFAR funding has supported a number of admissible services. What PEPFAR has demonstrated is the capacity of the private sector (for-profit and non-profit) to absorb funding and to support the rapid expansion of health care services to underserved communities.

PEPFAR funding has increased over the past four years from $89.3 million in fiscal year 20012 to $397.8 million in fiscal year 2016 (PEPFAR, 2016). All of this funding was spent in a highly-controlled environment, where strict adherence to complex financial rules is monitored through annual audits and where quarterly reporting of results is interrogated through data quality audits.

The mission of NGO's is essentially to provide healthcare services with no intention of making a profit. Thus, in exploring the role of the NGO in the healthcare space, it is essential that they look at areas such as:

- Health promotion
- Food supply, nutrition, water and sanitation
- Family planning, maternal/child care
- Immunisation
- Prevention and control of locally endemic diseases
- Appropriate treatment of common diseases
- Promotion of mental, emotional and spiritual health and
- Provision of essential drugs

The NGO's and other non-profit bodies, are progressively playing a larger role in the provision of healthcare services at a primary care level. Their efforts in HIV/AIDS and Tuberculosis healthcare are all powerful driving forces which are conspicuously changing the way this healthcare sector engages and complements in HSD.

b) National Health Insurance Scheme

The DoH is focused on implementing an improved health system, which involves emphasis on public health, as well as improving the functionality and management of the system through stringent monitoring of the budget and expenditure.

As part of its Medium Term Strategic Framework, the National DoH released its priorities for the period 2009 to 2014 (GDHSD, 2010). Also, known as the 10 Point Plan, this is a program aimed at improving hospital infrastructure and human

resources management, as well as procuring the necessary equipment and skills. The core tenets of the Plan are:

- Reorganisation of support services.
- Legislative reform.
- Improving quality of care.
- Revitalisation of hospital services.
- Speeding up delivery of an essential package of services through the district health system.
- Decreasing morbidity and mortality rates through strategic interventions.
- Improving resource mobilisation and the management of resources without neglecting the attainment of equity in resource allocation.
- Improving health human resource development and management.
- Improving communication and consultation within the health system and between the health system and communities they serve.
- Strengthening co-operation with their partners internationally.

Under this plan, health facilities, such as nursing colleges and tertiary hospitals are being upgraded and rebuilt to pave the way for the implementation of National Health Insurance Scheme (NHIS).

The NHIS is intended to initiate the reform that will improve service provision and healthcare delivery through the 10-point plan strategy. The principles for developing NHIS are to promote equity and efficiency to ensure that all South Africans have access to affordable, quality healthcare services, regardless of their employment status and ability to make a direct monetary contribution to the NHIS Fund.

The researcher noticed that since the launch of NHIS Green Paper, considerable knowledge has been shared and conjointly generated. The NHIS Green Paper is a policy discussion document intended to introduce an innovative system of healthcare financing with far-reaching consequences on the health of South Africans. It will ensure that everyone has access to appropriate, efficient and quality health services. The launch was accompanied by the following activities:

- Various workshops were held in all the 9 provinces.
- An international conference was also held to exchange knowledge and experience of introducing universal coverage in other countries.
- Eleven NHIS pilot districts involving various COP's were engaged.
- There was engagement and interaction with Minister of Health with over 15 300 stakeholders (GDH, 2014).

All these efforts of sharing and generating new knowledge were aimed at assessing the ability of PHC's to assume responsibility to effectively deliver improved healthcare services. According to the 10 Point Plan (DoH, 2014; DoH, 2015), the NHIS will be phased-in over 14 years, beginning in 2012. In 2012/13, the government earmarked R1 billion for its associated pilot projects.

c) Facilities

According to Dieleman *et al.* (2016), there were 4,200 public health facilities in South Africa. The number of facilities has decreased to 3,500 in 2015 but was supplemented by community-based services such as environmental health services, school health teams and community health workers (Gray & Vawda, 2015). The number of people per clinic is 13,718, exceeding the WHO recommendation of 10,000 per clinic. Figures from March 2009 indicated that, on an average, the public made 2.5 visits a year to public health facilities and at hospitals. PHC visits increased from 67 million in 1998 to 128 million in 2013. The usable bed occupancy rates were between 65% and 77%. Since 1994, more than 1,600 clinics have been built or upgraded. Free healthcare for children under six and for pregnant or breastfeeding mothers was introduced in the mid-1990s. The National Health Laboratory Service (NHLS) is the largest pathology service in South Africa with 265 laboratories, serving 80% of South Africans. The laboratories provide diagnostic services as well as health-related research.

d) Doctor shortages

According to Econex (2010), in March 2012, 165,371 qualified health practitioners in both the public and the private sectors were registered with the Health Professions

Council of South Africa (HPCSA), the health practitioner watchdog body. The doctor-to-population ratio is estimated to be 0.77 per 1,000. However, because the vast majority of general practitioners – 73% – work in the private sector, there is just one practising doctor for every 4,219 people.

In response, the DoH has introduced clinical health associates who are mid-level healthcare providers, to work in underserved rural areas. In some communities, medical students – about 1,200 medical students graduate annually - provide (supervised) health services at clinics. Newly graduated doctors and pharmacists complete a year of compulsory community service in understaffed hospitals and clinics.

However, in light of the current (proposed) changes in the health sector in SA, it was vital for the researcher to validate the veracity of all information. Whilst there is no argument against the fact that the private sector is better resourced, it was shown that proportionally more general practitioners and specialists are active in the public-sector than often reported. It was also shown that the population per GP ratio quoted in the NHIS proposal is incorrect and that this ratio is roughly the same for the private and public-sectors. According to Econex (2010), the recent release of the NHIS in September 2010 showed that contrary to official quoted sources that stated that there were 36,9123 doctors practising in South Africa, there were, in point of fact, only a total of 27,432 doctors (17,802 general practitioners and 9,630 specialists). This reflects a serious shortage of healthcare professionals in the public HS.

### 1.1.2. National health profile

a) HIV and TB

According to the South African National Aids Council (GDH, 2014), AIDS and other diseases such as TB and cholera place a tremendous load on South Africa's HS.). Also, according to the WHO's 1978 Alma Ata Declaration, "primary health care is essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country

can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination". It forms an integral part both of the country's health system and of the overall social and economic development of the community. By May 2016 some visible progress was evident:

- MTCT of HIV decreasing by more than 1%.
- The MTCT rate had been reduced from 3.5% in 2010 to less than 1%.
- The rate of new infections had also dwindled from 1.4% to 0.8% in the 18-24 age group.

HIV and TB are precarious bedfellows - South Africa has the world's sixth largest TB epidemic:

- Co-infection rates exceed 60%, with TB being the most common opportunistic infection in HIV-positive patients.
- The TB cure rate has improved in recent years.
- The number of people living with HIV who received TB treatment decreased to 337,000 in 2014 but failed to meet the national target of 450,000.

South Africa's National Strategic Plan 2012-2016 for HIV/AIDS and TB for 2012 to 2016 and the HIV Counselling and Testing (HCT) campaigns were launched in 2010. Their objectives were:

- To integrate HIV/AIDS and TB treatments.
- To address social structural drivers of HIV/AIDS, sexually transmitted disease and TB care, prevention and support.
- To prevent new infections.
- To sustain health and wellness.
- To protect human rights and access to justice for sufferers.

Increasing the number of ARV sites as well as the number of nurses certified to initiate ARV treatment has seen 3-million people in 2015 placed on ARV treatment, from 1.1-million in 2009. South Africa has the largest ARV therapy program in the world and an

improved procurement process has seen a 50% decrease in the prices of ARV drugs (SANAC, 2015).

b) Maternal health

According to statistics from the WHO (2012) and DoH (2012), South Africa had a maternal mortality ratio of 310 deaths per 100,000 live births. The infant (under-one) mortality rate in 2010 was 41 deaths per 1,000 live births, while the under-five mortality rate was 57 per 1,000 live births. South Africa is also far-removed from meeting its Millennium Development Goal target of 38 deaths per 100,000 live births.

Under the national Prevention of Mother-To-Child (PMTCT) Program, every pregnant woman is offered HIV testing and counselling. If a woman tests positive for HIV, she is put on to a regime of ARV therapy to avoid transmitting the virus to her baby and is offered a continuum of treatment, care and support for herself and her infant (SANAC, 2015). The campaign on Accelerated Reduction of Maternal Mortality in Africa (CARMMA), an African Union (AU) initiative, was launched in May 2012 and aims to reduce maternal and infant mortality rates.

c) Child health

Immunisation is a significant barrier against disease and death and the rates of children receiving their primary vaccines have steadily been increasing under immunisation programs (SANAC, 2015). Its objective is to protect children against vaccine-preventable diseases, such as measles, TB, cholera and pertussis. Measures to improve child health also include the expansion and strengthening of school health services and the establishment of district clinical specialist teams.

d) Traditional medicine

According to the South African Traditional Medicines Research Unit (SATMRU), an estimated 80% of South Africans consult traditional healers alongside general medical practitioners (WHO, 2012). However, the results from both the 2011 General Household Survey and 2014 General Household Survey on the use of health facilities

disproved the claim that 80% of black South Africans will first seek the assistance of a *sangoma* (AfricaCheck, 2013).

### 1.1.3. National health legislation

The National Health Act, 61 of 2003, provides a framework for a single health system for South Africa. The Act provides for a number of basic healthcare rights, including the right to emergency treatment and the right to participate in decisions on one's health. The implementation of the Act was initiated in 2006 and some provinces are engaged in aligning their provincial legislation with the National Act.

The implementation of the National Health Act, 61 of 2003 and related legislations mentioned above, takes cognisance of the regulatory and policy framework relating to the provision of national health, provincial health, district health services, health establishments and human resources planning and academic health complexes. It was the view of the researcher that the South African health system is undergoing a reform process that is focused on PHC re-engineering. Therefore, the National Health Act and health policy framework are working towards improving efficiency and effectiveness of the delivery of services. According to the council for health services accreditation of southern Africa (COHSASA), there are some notable success achieved, amongst them being:

- The reduction in AIDS prevalence.
- The reduction in cases of TB.
- The successful MTCT in combating AIDS.
- The reduction maternal and infant mortality.

### 1.1.4. Public-sector healthcare

Public-sector healthcare in South Africa is extensive, complex and fragmented. It is poorly managed at the strategic level and all too often at the point of service. The effects of mismanagement are particularly clear when it comes to financial and human resources. According to the National Treasury, in 2010 the public health-sector

consumed respectively 4% of the GDP and 14% of annual government expenditure. Those proportions are expected to rise.

South African public hospitals and clinics account for approximately 11% of the government budget. That 11% covers just about 40% of the total public healthcare budget. That in turn services 80% of the population's medical needs. This budget is spread over 9 provinces and not necessarily equitably. Some of the poorer and more rural provinces such as the Eastern Cape do not receive the same kind of funding as their wealthier counterparts, such as the Western Cape or Gauteng and as a result their medical facilities are of an inferior standard.

According to the 2010 GDH and Social Development, declaration, the public-sector healthcare employs over a quarter of a million people and, with the rise in resources promised for health, this number will increase. At least one in 34 employees in the formal sector of South Africa's economy and more than one in five public-sector employees work in public-sector healthcare (De la Porte, 2016). The ablest, productive and dedicated staff in the public health-sector are overworked and overstressed and cannot always rely on support from either above or below (De la Porte, 2016).

Bearing this in mind, it will be an enormous task to transform and turn public-sector healthcare around by addressing the widely-acknowledged problems of ICT infrastructure and information management. This is mainly because the healthcare services and activities are highly knowledge-intensive. Specialised expert knowledge and problem-solving expertise are the real products of knowledge-intensive services (Omotayo, 2015).

Key challenges were experienced in the GDH in the areas of finance, leadership, governance and HSD, human resources capacity, information management and technology and infrastructure. Despite a substantial increase in the need to manage public healthcare services and the challenges facing the GDH and the South African healthcare industry in today's knowledge economy, the GDH did not seem to have adopted a structured approach to KM and the alignment of KM with its business strategy and operational plan.

It has been suggested that, in the healthcare context, the KM process starts with recognising and identifying the knowledge to be captured, shared and stored. However, in the Gauteng province, there was scant reflection by the healthcare industry concerning KM.

This study investigated KM from the perspective of improved OP and service delivery in the public healthcare industry in the province of Gauteng.

The GDH demanded knowledge work from its workers in order to improve productivity. In such an environment, a workforce with superior skills is the key to achieving a sustainable and competitive advantage and for transforming the Department's overview from one that is product-based to one that is knowledge-based. Furthermore, the researcher is of the view that, knowledge and its productive effects have assumed a central role in explaining the productivity of modern organisations. The quality of skills in the department could thus be the key driver to business sustainability and healthcare service improvement.

### 1.2. Background to the research problem

Because GDH HSD contributes significantly to national productivity and the life-span of its citizens, quality is crucial to the development of the service. The Constitution of the Republic of South Africa, Act 108 of 1996, contains the Bill of Rights, which provides for not only basic human rights but also social and economic rights. Sections 27 and 28 of the Constitution further provide for the right to access healthcare. Healthcare services should therefore be available and accessible to all who need them, regardless of their socio-economic and geographical location.

In Gauteng, with healthcare challenges such as HIV/AIDS and TB, it is imperative to ensure quality HSD across all the healthcare entities. According to StatsSA's latest General Household Survey report (StatsSA, 2016), because of the poverty levels in South Africa, the vast majority of people are not covered by any type of medical aid scheme, with public facilities still being the primary choice when it comes to healthcare.

This research came at a time when South Africa was entering its fourth period of democratic government. South Africa, prior to 1994, was a racially divided country based on apartheid policies of racial segregation. The South African HS was equally segregated into different healthcare facilities; one for whites and another for blacks and this in both the private and public HSs across the country. In 1994, after the introduction of the new democratic dispensation, mainstreaming Primary Health Care (PHC) in South Africa was an idea 'whose time had come'.

The new democratic government, with an overwhelming mandate to undo racial discrimination policies of the past and to address those marginalised by apartheid had as mission to introduce a people-oriented public HS, that could fulfil the aspirations and meet the demands of a multi-racial community.

Despite some achievements in legislative reform (section 27 of the South African Constitution, National Health Act No.3 and NHIS) there still remain huge challenges. Launching the government's Green Paper on National Health Insurance Scheme (NHIS) in August 2011, the Minister of Health, Aaron Motsoaledi said that the challenge and intent of NHIS was to draw on the strengths of both the public and private health sectors to better serve the public. The prime elements of the crisis are a public HS which is so badly designed and managed that healthcare outcomes are poor and, secondly, a private sector which serves its customers well but at prices which ensure that only a small minority of the population can afford adequate coverage.

Alarmingly, there was a general outcry throughout the country about poor service delivery in most public service institutions, particularly those in provincial departments and municipalities. The most serious outcry concerned the basic services for healthcare, housing, electricity, water and sanitation. The most sensitive outcry, which was the focus of this research, was about the perceived collapse of the healthcare services in Gauteng (Meaney, 2012; Mkamba & Skade, 2012; Nombembe, 2012) epitomised by the incompetence and failure by the GDH to stop the severe deterioration in healthcare at hospitals and clinics in Gauteng, marked by shortages of medicines, collapsing infrastructure, broken equipment, inadequate provision of staff and misuse/misallocation of funds.

South Africa has made significant progress with certain aspects of healthcare:

- It has developed sound and progressive public health legislation and policies.
- Established a unified national health system.
- Increased and improved infrastructure at the primary care level.
- Introduced free maternal/ child health services (DoH, 2012).
- Ensured the steady increase of immunisation coverage.
- Supported the world's largest HIV/AIDS treatment program (Schaay *et al.,* 2011)

Despite these major achievements, the healthcare sector in the Gauteng Province continued to face significant challenges, which included a quadruple burden of disease (non-communicable diseases, TB and HIV and maternal/child mortality), barriers to accessing healthcare services, inequitable distribution of healthcare resources and continuing shortages of healthcare professionals and human resource capacity.

Other challenges, particularly in the GDH, include the following:

- The areas of innovative leadership, including the need to increase life expectancy (Oyekale, 2014).
- Decreasing maternal/child mortality.
- Combating HIV and AIDS (Whiteside & Strauss, 2014).
- Decreasing the burden of tuberculosis (StatsSA, 2012).
- Strengthening health systems' effectiveness (WHO, 2016).
- Decreasing waiting times and improving clinical outcomes, staffing levels and supplies of medication.

The significant issues of healthcare management capacity, which should be an urgent GDH priority, still need to be addressed. The management of financial resources, an increase in the burden of disease and a shortage of qualified health professionals have compounded this challenge (GDH, 2014; GDH, 2013; GDHSD, 2009). In this regard, it is important to distinguish between competency, HSD and OP and devise relevant KM strategies and principles to address all three, as well as recognising that individual

performance and HSD in the GDH and its health entities is also dependent on the GDH's overall OP.

In an attempt to address these challenges, the GDH in their plan "Gauteng Turnaround Strategy: Towards Effective Service Delivery, Strengthening Primary Health Care and a Clean Audit in 2014", address major aspects of the health system, including financial management, human resources, district health services, hospital management, information technology and infrastructure, amongst others. The strategy sets out the challenges but does not detail as to how the plan will be implemented. For example, regarding an IT system; the plan states that a comprehensive, long term ICT strategy for health will be developed but does not indicate what that IT strategy should contain or by when it will be implemented. Clearly, these are significant aspects of the health system, which must be addressed in a strategic manner. However, given that there is a presently a crisis in the health system now, what is required is an open and transparent recovery plan to get health services back on track.

Nevertheless, with the use of KM, innovative leadership and management, these challenges can be met (Mills & Smith, 2011). This provides an exciting opportunity to reflect on past performance and identify or revise strategies for improving the Gauteng Provincial DoH's OP, thereby achieving better healthcare service outcomes for the Gauteng public.

### 1.1.5. Situational analysis - Gauteng province, South Africa

This research was conducted in the most populous South African province, which is also currently receiving the most negative publicity. The South African Human Rights Commission (SAHRC), SECTION27, the Centre for Applied Legal Studies (CALS), South African HIV Clinicians Society and the Treatment Action Campaign (TAC) received many complaints from concerned healthcare workers at various hospitals and clinics in Gauteng (primarily in the greater Johannesburg area) who reported a complete breakdown in their ability to provide services of a reasonable standard to patients (Gray & Vawda, 2015) and about poor service delivery in the public HS in all South African provinces, particularly Gauteng. These complaints pointed to the lamentable state of many public hospitals in Gauteng, attributable to a multiple of

reasons. Some of these were pointed out in the introduction to this thesis and others are alluded to in the background to the research problem, including, most importantly, the disregard for patients' rights and poor hospital management (Marumo, 2016).

Access to healthcare services in the Gauteng Province, especially those for the poor, is severely constrained by:

- Expensive, inadequate or non-existent transport.
- Serious shortages of emergency transport.
- Long waiting times at clinics and other healthcare service providers.

Poverty has long been recognised as a major cause of ill-health and is a barrier to accessing healthcare services. The issue of poverty has repeatedly been raised over time as an impediment to accessing healthcare services in Gauteng.

During the research, the GDH referred to its policy documents and operational plans to its explicit commitment to the progressive realisation of improved OP, HSD and the right of access to healthcare services. However, it is the implementation of its policies and plans which has proved to be the major stumbling block.

#### 1.2.1.1. Gauteng socio-economic and demographic profile population

Statistics South Africa (StatsSA, 2016) estimates the population of South Africa to be 54 million as at July 2014, where about 30,0% of the population is aged younger than 15 years and approximately 8,4% (4,54 million) is 60 years or older.

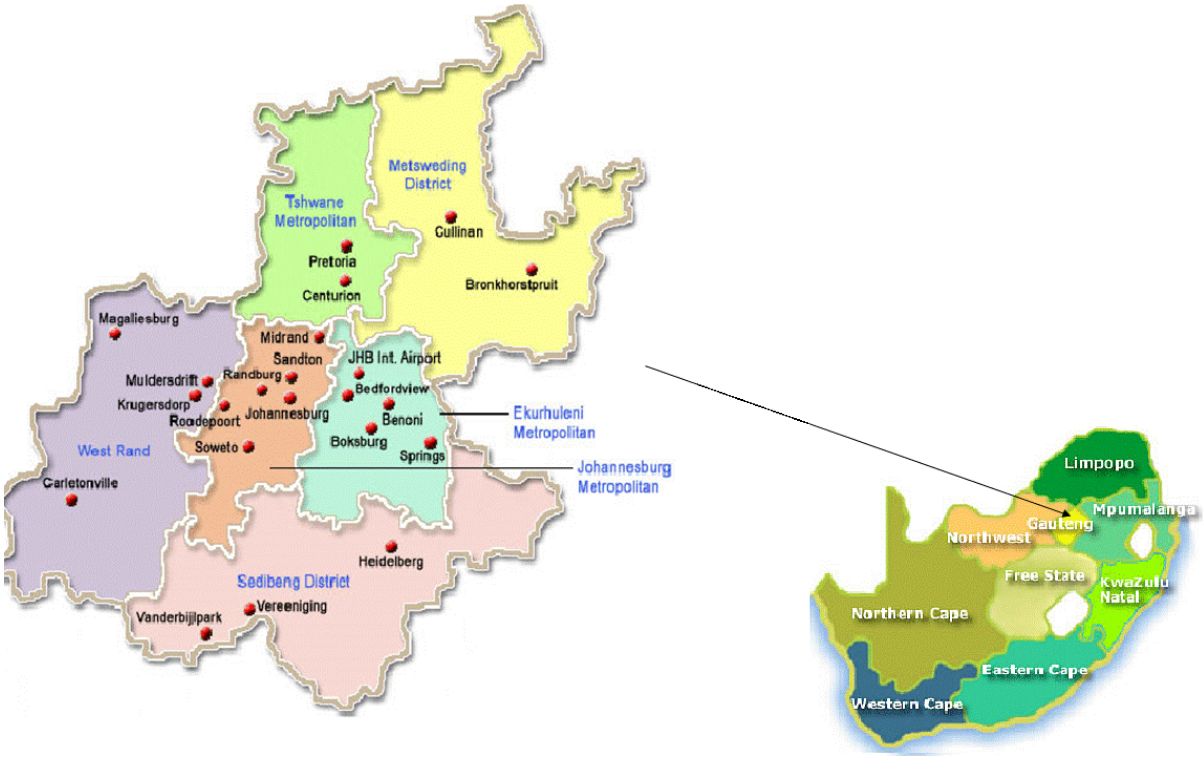
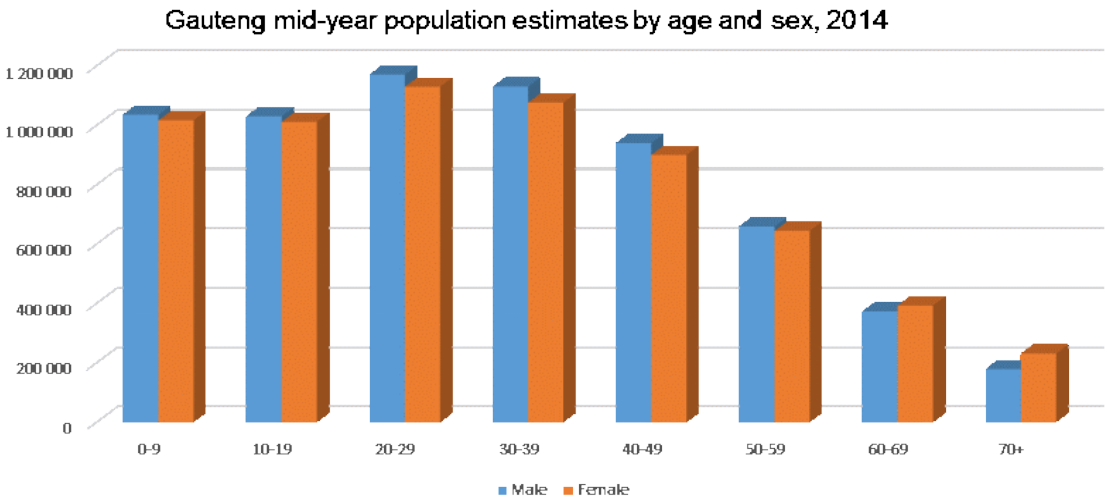



Figure 3: South African Provinces.
Source: GDH (2013)

The Mid-year population estimates further indicated that approximately fifty-one per cent (approximately 27,64 million) of the population is female and the majority of the population are Black African (80,2%), being approximately 43,33 million. The proportion of elderly persons aged 60 and older is increasing over time and of those younger than 15 years, approximately 18,8% (3,05 million) live in Gauteng. Gauteng occupies 1.4% or 16 548 square kilometres of South Africa's land area (Figure 3) and is the country's most populous province. According to the Mid-year population estimates 2016 (StatsSA, 2016), Gauteng now has the largest population of all the provinces and a quarter of all South Africans, numbering 12,91 million. It contributes 33% to the national economy and a phenomenal 10% to the GDP of the entire African continent.

Figure 4 shows the detailed provincial population estimates by age and sex. About 23,6% (3,048 148 million) of the population is aged younger than 15 years and approximately 9.1% (1,174 271 million) is 60 years or older.



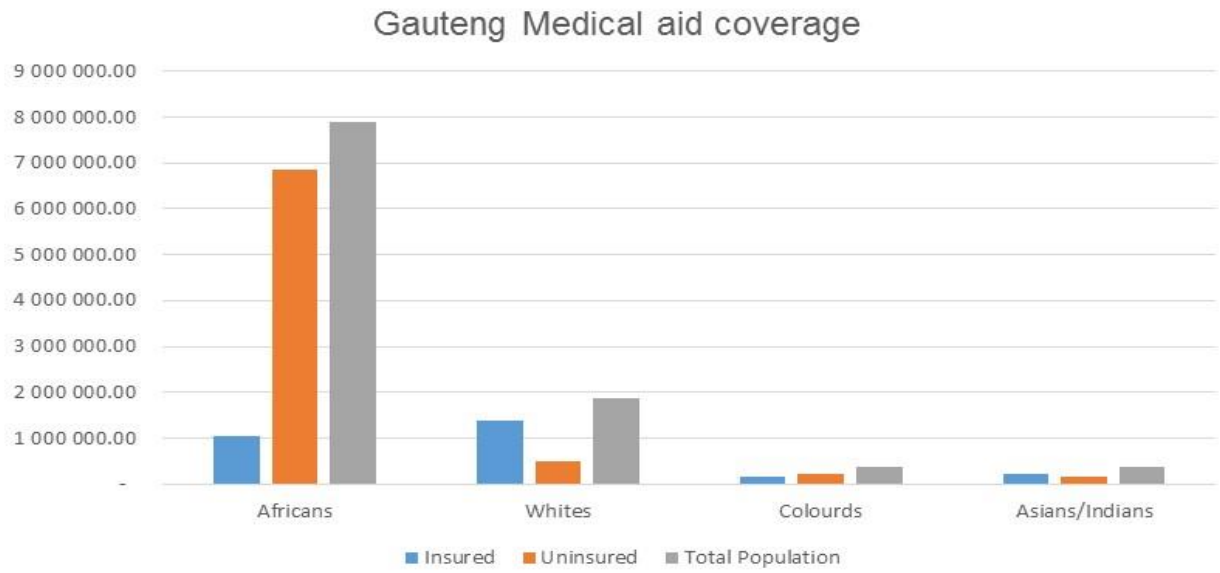

| | 0-9 | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70+ |
|---|---|---|---|---|---|---|---|---|
| Male | 1 035 554 | 1 029 953 | 1 170 313 | 1 129 896 | 939 713 | 658 545 | 372 820 | 178 390 |
| Female | 1 016 259 | 1 011 235 | 1 129 549 | 1 075 895 | 899 842 | 643 791 | 392 379 | 230 682 |
| Total | 2 051 814 | 2 041 188 | 2 299 862 | 2 205 791 | 1 839 555 | 1 302 336 | 765 198 | 409 073 |

Figure 4: Gauteng Mid-year population estimates by age and sex, 2014
Source: Mid-year Population Estimates, StatsSA (2014)

While it is the country's smallest province, it has the largest population and by far the highest population density – over 550 people per square kilometre. This dysfunctionality in Gauteng stems from the cumulative impact of impediment of diseases, economic pressures, population surges and policy and strategy incoherence.

The province has the most important health centres in the country (GDH, 2014; GDH, 2013; GDHSD, 2009). Other factors that have put pressure on the Gauteng HS are socio-economic issues. The baseline data of the Gauteng Development Strategy have shown that 48% of children are living in poor households and are therefore daily confronted with issues of family breakdown, sexual assault and various forms of child abuse.

According to 2016 mid-year population estimates in Figure 4 (StatsSA, 2016), 9.1% of Gauteng's population is made up of older persons over the age of 60 who must be provided with appropriate healthcare, that is: residential, home-based, community-based and support services.




| | Insured | Uninsured | Total Population |
|---|---|---|---|
| Africans | 1 032 000.00 | 6 856 000.00 | 7 888 000.00 |
| Whites | 1 381 000.00 | 491 000.00 | 1 872 000.00 |
| Colourds | 153 000.00 | 209 000.00 | 362 000.00 |
| Asians/Indians | 226 000.00 | 153 000.00 | 379 000.00 |
| Total | 2 792 000.00 | 7 709 000.00 | 10 501 000.00 |

Figure 5: Gauteng medical aid coverage
Source: StatsSA (2012a)

The three most vulnerable categories of the above-mentioned Gauteng population fall within the 24.3% of Gauteng households in which only one or no member of the family belong to a medical-aid scheme. According to the General Household Survey 2011 released in 2012 (StatsSA, 2012), a relatively small portion -16.9% - of the individuals in South Africa had a medical-aid scheme in 2009 (Figure 5).

#### 1.2.1.2. Overview of the organisational environment healthcare services

Key issues mentioned in the introduction and further discussed in the background to the research problem faced by the healthcare services of the GDH in the last five years and which are likely to persist over the next five years (GDH, 2014; GDH, 2013; GDHSD, 2009), are:

- The shortage of skilled professionals.
- Unfunded vacant posts.

- The cost of implementing the occupation-specific dispensation (OSD).
- Persistent over-expenditure, accruals and cash flow difficulties; and
- Ageing equipment and infrastructure.

Table 2: Departmental revenue

| Departmental Revenue | Actual 2007/08 (R'000) | Actual 2007/08 (R'000) | Actual 2007/08 (R'000) | Actual 2007/08 (R'000) | Actual 2007/08 (R'000) | % deviation from target |
|---|---|---|---|---|---|---|
| Current revenue | R 0,00 | R 0,00 | R 0,00 | R 0,00 | R 0,00 | 0,00% |
| Tax revenue | R 0,00 | R 0,00 | R 0,00 | R 0,00 | R 0,00 | 0,00% |
| Non-tax revenue | R 377 647,00 | R 397 626,00 | R 406 948,00 | R 439 014,00 | R 402 984,00 | 9,00% |
| Capital revenue | R 0,00 | R 0,00 | R 0,00 | R 0,00 | R 0,00 | 0,00% |
| Departmental Revenue | R 377 647,00 | R 397 626,00 | R 406 948,00 | R 439 014,00 | R 402 984,00 | 9,00% |

Source: GDH and Social Development Annual Report, 2010 – 2011 (GDH and Social Development, 2010)

In addressing these challenges, the department formulated a HSD model (GDH, 2014; GDH, 2013; GDHSD, 2009), which involved working in partnership with non-profit organisations (NPOs), community-based organisations (CBOs) and faith-based organisations (FBOs) as a strategic initiative to extend its HSD network to vulnerable citizens.

The GDH's main source of revenue is patient fees, which contributes 75% of the budget (Table 2). There has been a steady increase in revenue over the past three years, from R378 million in 2007/08 to R439 million in 2010/11. The latest figures represent a R33 million (8%) increase on the 2009/10 financial year (Table 2).

There is some over-expenditure in other critical areas of service delivery but, overall, the department's annual expenditure is within budget at 99% (

Table 3). This could be one of the challenges at which point budget limitations constrain further delivery of crucial healthcare services.

Table 3: Departmental expenditure

| Programme | Adjusted budget 2010/11 (R'000) | Expenditure 31 March 2011 (R'000) | % spend 31 March 2011 | (Over) under expenditure (R'000) |
|---|---|---|---|---|
| Administrtaion | R 789 216,00 | R 2 085,00 | 80,00% | R 155 819,00 |
| District health services | R 5 947 084,00 | R 6 102 912,00 | 103,00% | -R 155 828,00 |
| emergency medical services | R 660 873,00 | R 480 329,00 | 73,00% | R 180 544,00 |
| Provincial hospital services | R 4 642 471,00 | R 5 159 139,00 | 111,00% | -R 51 668,00 |
| Central hospital | R 5 755 290,00 | R 6 373 515,00 | 111,00% | -R 618 225,00 |
| Health sciences and training | R 692 682,00 | R 642 085,00 | 93,00% | R 50 597,00 |
| Health care support services | R 158 847,00 | R 151 175,00 | 95,00% | R 7 672,00 |
| Health facilities management | R 2 047 477,00 | R 1 193 819,00 | 58,00% | R 853 658,00 |
| Social welfare services | R 1 697 219,00 | R 1 506 957,00 | 89,00% | R 190 262,00 |
| Develoment and research | R 177 279,00 | R 136 854,00 | 77,00% | R 40 425,00 |
| **Total** | **R 22 568 438,00** | **R 21 748 870,00** | **99,00%** | **R 653 256,00** |

Source: GDH and Social Development Annual Report, 2010 – 2011 (GDH and Social Development, 2010)

#### 1.2.1.3. Gauteng epidemiological profile and health status

The 2010 population estimates released in July 2010 showed life expectancy at birth to be 53.5 years for males and 57.2 years for females (GDH, 2014; GDH, 2013; GDHSD, 2009). The four major categories of illness contributing to poor health status are:

- Maternal problems, women and children's health;
- HIV, AIDS and pulmonary TB;
- Non-communicable diseases;
- Failure to lead a healthy lifestyle.

As far as the above-mentioned category of illnesses is concerned, the existing effective and affordable intervention could save a great many lives (WHO, 2007) but the Gauteng health systems have failed to adequately address the preventable causes of mortality.

In 2016, 15% of Gauteng's population were infected with the HIV virus. This translates into approximately 1.05 million people in the province (Table 4).

Table 4: Gauteng HIV and AIDS prevalence

| | Gauteng | |
|---|---|---|
| Whole Population | 15% | • Gauteng is experiencing the second most severe HIV epidemic in the country after KZN. |
| Antenatal clinic estimates | 36% | |
| Adult (ages 20 -64) | 22% | |
| | | |
| People living with HIV | 1,050,000 | A total of 1.05 million people (15% of the population) and one in every 5 adults are estimated to be HIV positive in 2016. |
| New HIV infections (over the year) | 103,000 | |
| AIDS deaths (over the year) | 91,000 | |
| | | |

Source: StatsSA (2016), Mid-year population estimates 2016/20/16.

According to the (GDH, 2014; GDH, 2013; GDHSD, 2009), the significant contribution of non-communicable diseases to the demand for medical care was indicated by the data for the top 11 diagnoses upon admission to hospital in Gauteng. Substance abuse was recognised as one of the greatest health and social problems in Gauteng and in South Africa as a whole. It is precisely for this reason that, according to GDHSD (GDH, 2014; GDH, 2013; GDHSD, 2009) statistics, there were 3,158 admissions to 22 treatment centres in Gauteng from July to December 2008 and this number increased by 12% in 2009. Clearly, the Gauteng provincial health-sector is faced with the increasing burden of disease and a growing population, resulting in an increasing number of patients.

#### 1.2.1.4. Gauteng HS's priorities

To align itself with the national health priorities for the five-year period starting in May 2009, the GDH has adopted several of the priorities listed in the organisational environment overview. These national priorities are contained in the 10-point plan GDH Annual Report 2012–2013 (GDH, 2013), which seeks to increase life expectancy, decrease maternal/child mortality, fight and reduce HIV and AIDS, decrease the burden of TB and strengthen the health system by focusing on the revitalisation of PHC.

These aligned provincial priorities were the provision of strategic leadership and creation of a social contract for better health outcomes, the implementation of an NHIS plan, improving the quality of the services, improving human resources management, overhauling the HS and improving its management and developing management and strategic leadership to improve the effectiveness, accountability and responsiveness of managers (GDH, 2014; GDH, 2013; GDHSD, 2009).

Clearly, judging by national and provincial health priorities, HSD and OP are the major focus areas in the GDH. Senior management ought to focus on strategic and operational issues, while HSD and OP should be the priority strategic areas. Some of the important interventions and tools used in the Gauteng HSs to improve OP and HSD include electronic healthcare/records (Telemedicine) and electronic healthcare policies.

a) Gauteng electronic healthcare records

An electronic health record is a collection of the personal health information of a single individual, entered or accepted by healthcare providers and stored electronically.

None of the regional and provincial hospitals and healthcare centres in the province have a functioning electronic medical record system. There are several systems in place, which are not inter-operable. The level of information exchange is therefore extremely low. As a result, the environment is characterised by fragmentation and lack of inter-operability and automation.

b) Gauteng mobile e-healthcare/Telemedicine

The progress of telemedicine from mobile devices is likely to play an ever-increasing role in medical informatics, telemedicine and healthcare education in Gauteng and may have a significant impact on the future of the healthcare services. E-healthcare would address changes in access to healthcare information and healthcare services for both medical practitioners and individuals.

This transformation, enabled by e-healthcare, would challenge the traditional roles of the Gauteng regional and central hospitals, as well as healthcare centres, where healthcare exchange has always been carried out manually. Telemedicine has likewise been recognised as an effective means of overcoming the challenges of reaching out to all the communities in Gauteng, particularly the peri-urban and rural areas, where there has been a great deal of scepticism about its practicalities.

There is little to suggest that circumstances have changed in terms of the shortage of healthcare workers in Gauteng and the failure to manage change when implementing telemedicine. Despite this challenge, telemedicine still holds considerable promise as a tool to support the improved delivery of healthcare services, especially in the rural areas of Gauteng.

c) Gauteng e-healthcare policies

There are glaring challenges when it comes to policies, in that the health information systems (HIS) are not meeting the requirements for supporting the business processes of the HS in Gauteng (GDH, 2014; GDH, 2013; GDHSD, 2009). Although the responsibility for the e-healthcare strategy development resides with the DoH, the delivery of e-healthcare services in public-sector facilities and hospitals is the responsibility of the provincial DoH.

Basic enabling policy in Gauteng is in place for the use of information communication and technology in e-governance. There are, however, major challenges in that:

- There is no national e-healthcare strategy and enterprise architecture.
- There is a low degree of co-operation, collaboration and sharing across Gauteng healthcare entities.
- There is low broadband penetration.
- Bandwidth is expensive.
- Many health workers are not computer literate.
- There is no culture of KM and information governance.

- There are few KM practitioners or medical practitioners with e-healthcare experience and not enough people have been trained in the field.

The reason why e-healthcare is considered so important in the Gauteng healthcare framework is the prevalent shortage of healthcare service professionals. E-healthcare technologies have the potential to improve HSD to the broader community of Gauteng.

However, if these technologies are to be implemented, a number of challenges will have to be addressed. These include network access and bandwidth, staff training and, above all, the formulation and implementation of a new management strategy. A key consideration in formulating this strategy is the emphasis of creating a culture that would be conducive to e-service delivery at the various Gauteng healthcare facilities affected by the system. The e-healthcare technology framework could serve as a point of departure for developing an e-healthcare strategy that would support the implementation of electronic healthcare services in the broader Gauteng HS.

### 1.1.6. Gauteng Department of Health


**Figure 3** – Gauteng Healthcare Regions

**Source :** **(Gauteng Department of Health, March 2010)**

Figure 6: Gauteng healthcare regions

The GDH's area of responsibility is divided into three regions (Region A, Region B and Region C), as illustrated in Figure 6. The department is responsible for 137 provincial and 180 local government clinics (with mobile units in some instances), 35 Community Health Centres, five Health Districts, eleven District hospitals, eight Regional Hospitals, three Tertiary Hospitals, four Central Hospitals, six Specialised Hospitals (4 Psychiatric, 1 Rehab and 1 MDR), three Oral Health Centres, ten Nursing Colleges and several children's homes and shelters for abused women and children (GDH, 2014; GDH, 2013; GDHSD, 2009).

The department offers PHC services through its facilities, including forensic medical services, emergency medical and rescue services, health sciences and training and health facilities management (GDH, 2014; GDH, 2013; GDHSD, 2009).

Furthermore, the GDH's responsibilities, in accordance with national health policy and the relevant provincial health policy, is the management of:

- The provincial health information system.
- The financial management of district health councils.
- The provision of technical and logistical support to district health councils, conducting or facilitating research on health and healthcare services.
- The management and development of human resources for the deployment of the healthcare services; and
- Planning the development of public hospitals (National Health Act, 2003).

The GDH is currently attracting adverse and negative media publicity on poor HSD. It received a negative report from the auditor general (Nombembe, 2012) on its financial management. This prompted intervention by the DoH and the National Treasury concerning the lack of proper administration. Intervention by these two national departments was meant to ensure that better systems were put in place so that the GDH could move to a position where it could improve OP and provide quality healthcare services.

### 1.2.1.5. GDH governance and legislative responsibilities

The Public Finance Management Act (PFMA) was introduced largely to ensure accountability and improve OP and service delivery in the public-sector. The PFMA recognises the important principle of accountability in all the areas of governance. In accordance with the Act, the GDH provides reports to the Gauteng Legislature, the Health and Social Development Portfolio Committee of the legislature, the DoH, the Provincial Treasury and the general public (Figure 7).

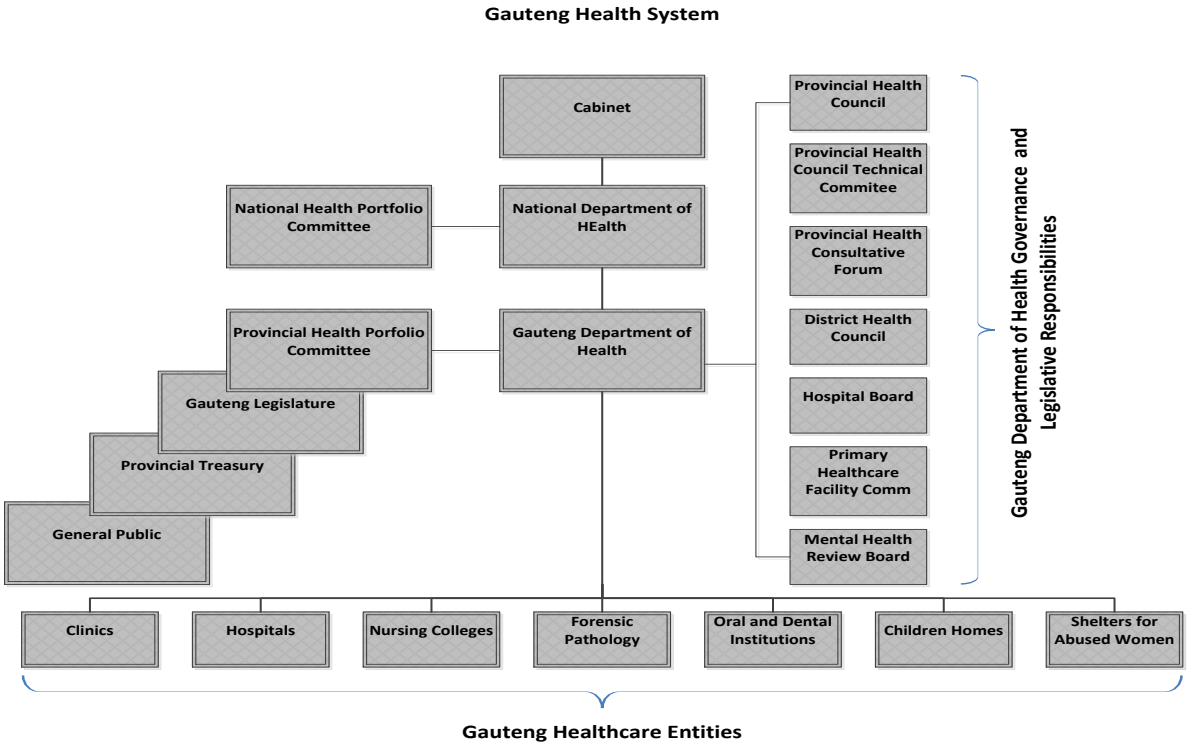



Figure 7: Gauteng HS

a) The Provincial Health Council

The PRHC's primary purpose is to deliberate and make decisions on matters of policy aimed at protecting, promoting, improving and maintaining the health of the population of Gauteng.

b) The Provincial Health Council Technical Committee

The PHCTC comprises the GDH Head of Department and executives and senior officials of the department, three metropolitan councils and three district municipalities in Gauteng. The PHCTC is the advisory body of the PHC.

c) Provincial Health Consultative Forum

The MEC, appointed primarily to promote and facilitate communication and interaction on provincial health matters, engages with a wider group of stakeholders through the PHCF.

d) District health councils

The role of the DHC is to promote co-operative governance, to advise the MEC and to ensure the co-ordination of planning, budgeting, provisioning and monitoring of all health services affecting the health district.

e) Community participation

The National Health Act provides for structures to be established to enable members of communities to participate actively in the governance of the department and its various institutions. The following community participation structures have been established:

- Hospital boards: The main functions of hospital boards are to ensure both the accountability of health facility management to the community and responsiveness to the needs of patients and their families.

- Primary healthcare facility committees: These perform an advisory and oversight function and report directly to the MEC for Health and Social Development

- Mental health review boards: Their functions include considering appeals for discharge and reports of abuse, reviewing applications for assisted and involuntary admissions and transfers to maximum security facilities and approving periodic reports on the mental health status of patients requiring continual care.

### 1.1.7. National Department of Health

The NDH is responsible for providing a framework for a structured and uniform health system in the Republic (National Health Act 2003).

In terms of the National Health Act (2003), the DoH has the responsibility for uniting the various elements of the national HS in a common goal to actively promote and improve the national HS in South Africa. Its functions include:

- Providing for a system of co-operative governance and management of healthcare services within national guidelines, norms and standards.
- Establishing a HS based on the decentralised management principles of equity, efficiency and sound governance; and.
- Promoting a spirit of co-operation and shared responsibility among public and private healthcare professionals and providers and other relevant entities.

The challenges it faces are the lack of capacity to manage and coordinate the massive load of knowledge within the HS and lack of insight to provide action and knowledge oriented learning to build the capacity for quality HSD. The challenges are also as a result of inability to capture the diverse spectrum of knowledge that leads to national health impact.

### 1.1.8. Gauteng provincial statutory health bodies

The public health entities and statutory health professional councils, by means of which the GDH provides provincial healthcare services to the Gauteng citizens, have been created in accordance with the relevant legislation. For the purpose of this study the researcher referred to the public healthcare entities and statutory health bodies collectively as the statutory health bodies.

The statutory bodies for the health-service professions include:

- Allied Health Professions Council of South Africa.
- Council for Medical Schemes.
- Health Professions Council of South Africa.
- Medicines Control Council.
- The National Health Laboratory Service.
- South African Dental Technicians Council.
- South African Medical Research Council.
- South African Nursing Council.
- South African Pharmacy Council.

The above-mentioned statutory health bodies were established mainly to manage, monitor, regulate and control processes, services and products in their respective areas of healthcare. They are fully or substantially funded by either the National Revenue Fund, or by way of a tax, levy or other charges imposed in terms of national legislation. Their administrators are accountable to parliament.

Therefore, the healthcare professionals and their organisations, as listed above, have a central role to play to provide informed leadership in healthcare issues, provide education and training of all levels of healthcare personnel at the GDH and strive to encourage healthcare value by simultaneously improving quality of HSD and slowing the rate of increase of healthcare costs.

## 1.3. Research focus

The focus of this research was on the use of KM by the GDH for the improvement of OP and HSD. It also looked at KM as the acquisition of resources to create an environment at GDH in which information is accessible to healthcare professionals and in which employees create/acquire, share/transfer, retain/store and apply/use knowledge and use information to develop their own knowledge and are encouraged and enabled to apply their knowledge for the benefit of the organisation.

In the public-sector organisation, improved OP and service delivery can be observed in effective knowledge infrastructure capabilities and knowledge process capabilities (Zaied *et al.,* 2012; Suzana & Kasim, 2010; Chang & Chuang, 2011). This view is further extended by (Baporikar, 2013) when he stated that improved OP and service delivery can be observed also in a sense of strong, purpose-driven leadership, as well as prioritisation aligned to the basic principles of public administration. The researcher was of the view that these principles are precise policy formulations and that every employee in the organisation should be empowered to implement and execute purpose those said principles. This would have the merit of encouraging employees to apply their knowledge for the benefit of the organisation so that competitive advantage and service delivery are achieved (Baporikar, 2013).

When public leaders align themselves with the purpose of the organisation's capabilities (Ekionea *et al.,* 2011), subordinates are more likely to show commitment to improved performance. Indeed, the fundamental purpose for which government departments exist is to provide satisfactory services to the general public. Thus, the researcher held the view that purpose-driven leadership is should be viewed as an effective approach that would promote the broader interests of society in respect of service delivery to the public.

With the recent South African public-sector reform initiatives, the researcher having participated in some of these public-sector initiatives, for example, the merger of the government central computer services (CCS), South African Police Services (SAPS) IT Department and Denel Infoplan to form the current State Information Technology Agency (SITA), was of the view that KM could be a powerful enabler in the current

drive for increased efficiency, particularly in service delivery in the public-sector. The objective was to look at activities that recognise the requirements of knowledge workers, human resource development activities and the understanding of the OC (Baporikar, 2013). Moreover, by using the knowledge workers' knowledge efficiently and effectively, the GDH would be able to improve its OP and offer improved quality healthcare services to the citizens of the Gauteng province.

The Gauteng citizens demand and receive more customisation from knowledge-orientated private sector organisations, so they expect similar service and benefits from the GDH. Natural attrition and the retirement of civil servants and frequent resignations and transfer of knowledge workers across government departments create new challenges for the retention of knowledge and the preservation of institutional memory, hence the need for the continuous training of existing and new staff. Finally, for the effective execution of its mandate, the department depends on employees' knowledge rather than on their manual skills, effective knowledge infrastructure capabilities and KM processes.

### 1.4. Statement of the research problem

South Africa, a newly industrialised country (NIC), had its health system modernised in the year 2000, yet public healthcare is deteriorating, not improving, with each and every passing day. Currently the country's infant mortality rate is 6 times higher than in the Organisation for Economic Co-operation and Development (OECD) countries. About 7.9 million South Africans have HIV/AIDS or 19.2% of South Africa's total population with 17% of the adult population that lives with this dreadful illness. Most of them live in rural South Africa. Death rates from these are extremely high – about 180 000 each year.

According to GDH, the department is facing serious challenges in OP and quality HSD. This situation is compounded by public health challenges that include:

- A quadruple burden of disease like HIV and TB.
- Economic and social inequity.
- Barriers to accessing health services.

- Inequitable distribution of health resources.
- Continuing human resource capacity needs like a shortage of key medical personnel.
- A knowledge-based view.
- A knowledge-orientated and learning OC.
- An OS.
- Skilled personnel.
- Management support.

These deficiencies undermine the department's capacity for revitalising and re-orienting the provincial response to quality service delivery, amongst other issues and to support healthcare facilities and systems.

In light of the growing concern about these key challenges facing GDH's HSD, the GDH addressed the need for some form of decisive action to its OP and HSD. This resulted in the formulation of the strategy document "Gauteng Turnaround Health Strategy: Towards Effective Service Delivery, Strengthening Primary Health Care and a Clean Audit in 2014" (GDH, 2014; GDH, 2013; GDHSD, 2009) and the adoption by the Gauteng Provincial Government, of a 10 pillar programme, contained in the "Annual Performance Plan 2016/17 - 2018/19" (GDH, 2016), that is aimed at radically transforming, modernising and re - industrialising Gauteng over the next five to fifteen years with special focus on 'Accelerated social transformation'. In response to the urgency of these challenges, GDH has committed to the several priorities for the five-year period 2015 – 2020 and commenced implementation in the 2014/15 financial year.

Because of the serious challenges in OP and quality HSD, the researcher believed that the continued use by the GDH of the traditional financial and physical assets can no longer be sustained. On the contrary, the researcher argued that the utilisation of human knowledge is a valuable organisational asset. This view was supported by the findings by Khanal, Lamichhane, Joshi, Koirala, Bhatta, Neupane, Karki, Gautam, Neupane, Yadav & Sigdel (2014) that the importance of KM has increased over the

years and that around half of the wealth generated in the advanced industrial societies is derived from knowledge capital.

However, as shown in the literature search, successful KM demands an organisation with a knowledge-based view, a learning organisation, a knowledge workforce, a knowledge-orientated OC, OS, human resources practices, skilled personnel and management support (Amir & Parvar, 2014). These could improve OP and HSD. The department cannot function properly and thus cannot be competitive because it lacks these enablers and furthermore cannot afford to have unskilled work in the knowledge economy.

Uncertainty persists as to whether the use of KM principles can be utilised to solve the problem of the GDH's approach to improving its OP and the quality of its HSD to the Gauteng community in the modern information and knowledge environment. (Handzic & Durmic, 2015) emphasised in their study that knowledge is critical for the organisation's ability to manage and that the most successful companies in business have begun identifying themselves with their knowledge assets rather than with their physical assets.

The GDH could possibly acquire and create knowledge as an asset by developing a knowledge-based business strategy to emulate an improvement in OP, HSD, good governance and management with the knowledge assets that produce them.

The research sought to make recommendations on the success factors that confirms KM as a potential solution to improving the OP of the GDH. It suggested that the knowledge base required to actualise the mandate, vision, programs, objectives and goals of the GDH and how this knowledge-base should be built, maintained and managed in order to improve on the quality of the healthcare services.

The problem investigated in the current research can therefore be formulated as:

KM can be used by the GDH to improve its OP and provide quality healthcare services to its citizens. The research problem was further addressed by looking at the research objectives, research questions (what? why? how?) and the possible sources of data.

Objectives cited the components of the logical structure that the study would explore and provide a framework for formulating and testing hypotheses and posing the relevant research questions.

## 1.5. Research objectives

The GDH Department's Strategic Plan for 2009-2014 (GDH, 2014; GDH, 2013; GDHSD, 2009) attempted to address challenges identified in the statement of the research problem (Section 1.4) above. The study was intended to assess and evaluate KM at the GDH and how it could be utilised to improve OP and HSD. This study was conducted based on the following objectives:

- To determine the level of understanding of KM in the GDH and related healthcare facilities and public-sector entities at all levels and categories of employment

- To investigate how aligned are the KM strategies with the GDH strategies, business and operational objectives

- To determine and assess how is KM used by employees in the GDH, given the demands of public-sector reform to improve OP and service delivery

- To present a KM model and make recommendations on implementing KM practices that will improve OP and HSD

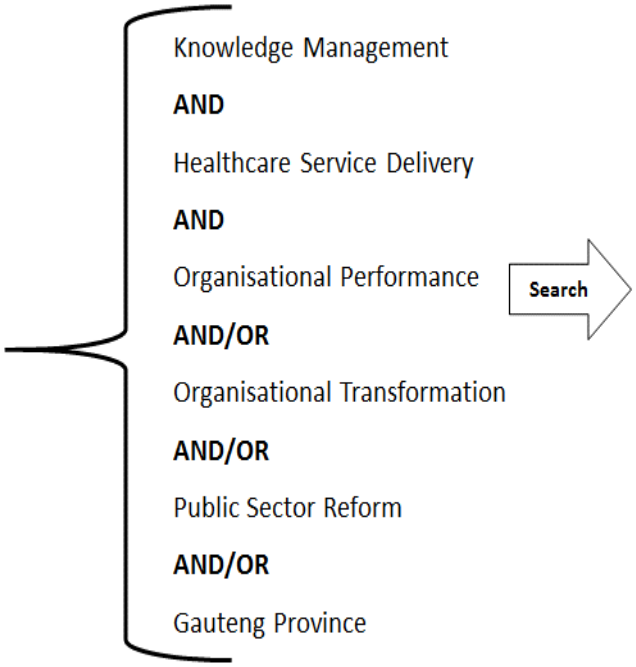
## 1.6. Scope of the study

In line with the research questions and the research objectives, this study focused on the GDH, healthcare entities and government hospitals in Gauteng Region A. This research investigated how the GDH could use KM to improve OP and HSD. KM thus formed the foundation of the study.

While the concept of KM has been extensively researched in other fields, practically no research has been conducted on the use of KM in the public healthcare services in Gauteng, South Africa (see Table 5).

Table 5 was constructed and populated with the number of hits from the databases searched, using a combination of the research keywords. These combinations essentially captured the essence of the research topic.

Table 5: Databases Search with Study Keywords




| Database | Results |
|---|---|
| IEEE Xplore | 0 |
| ACM Digital Library | 0 |
| WorldCat | 0 |
| ProQuest (PQDT) | 0 |
| EbscHost | 0 |
| Taylor and Francis Online | 0 |
| SpringerLink | 0 |
| Scopus | 0 |
| ScienceDirect | 0 |
| Inspec | 0 |
| InfoSECURITYnetBASE | 0 |
| NetLibrary | 0 |
| Willey Interscience | 0 |
| IGI Global E-Books | 0 |
| Sabinet (UCDT) | 0 |
| NRF Nexus | 0 |
| South African Indeces (NISC) | 0 |
| EBSCOHostBooks | 0 |
| SAGE Research Methods (SRMO) | 0 |

The purpose of a unique permutation search was to narrow down the search to the research focus area. The result indicated that no research focusing on this area was available or was being conducted at that stage. The scope of the study was therefore limited to an investigation of the use of KM in the DoH for OP and HSD.

Furthermore, GDH has an extensive information management systems infrastructure and various ICT tools that they use for extracting information from the databases and generating reports. The study did not attempt to compare the use of KM with that of ICT (information systems and business intelligence systems) used by the GDH,

healthcare centres, statutory health bodies and hospitals and also did not attempt to suggest the implementation of any particular KM strategies as the means of substantiating the research results.

Also, some challenges facing the GDH which have an impact, in one way or the other, on OP and HSD were highlighted, namely, challenges in areas of financial management, HR management and leadership. The study did not address these areas using KM. These challenges were often raised as enablers or obstacles to KM.

### 1.7. Research questions

The primary research question guiding this study was: how could the Gauteng Department of Health use knowledge management to improve organisational performance and healthcare service delivery? It was suggested that KM helps organisations make better and faster decisions and contributes to improved productivity, business performance and service delivery (Dey, Thommana & Dock, 2015). The aim was to illustrate that the improvement in OP and service delivery could have an impact of the utilisation of KM to address issues of faster decision-making, people management, productivity improvement, financial management and good governance.

Answers were sought to the following sub-questions:

(1) What was the level of understanding of KM in the GDH and related healthcare facilities?

(2) How were KM strategies and practices aligned with the GDH strategies and operational objectives?

(3) How was KM used by the employees in the GDH?

(4) How could the results of the literature review and the empirical data be used to create a knowledge-management culture for the GDH? This would include knowledge creation/acquisition, knowledge-sharing/transfer,

knowledge retention/storage and knowledge application/use and a collaborative working environment (OC, OS, leadership).

## 1.8. Rationale for the study

Creswell (2007) observed that the rationale for a study explains its importance. The importance of carrying out detailed research on the role of KM in enhancing OP and HSD in the GDH cannot be over-emphasised. First, as a concept, KM is relatively new to many organisations (Dewah, 2012). While the GDH was producing and acquiring knowledge, there was no guidance on the creation/acquisition, share/transfer, retention/storage and application/use of such knowledge.

The GDH is facing serious challenges in respect of HSD. The improvement of HSD is therefore extremely pressing for the GDH, as it needs effective strategies for successful and sustainable transformation in line with public-sector reform. If successful transformation is to improve healthcare services (HS) and business performance, one possible solution to overcome the problem could be for the GDH to use KM strategies (Mills *et al.,* 2011)

The knowledge-based view considers knowledge to be a strategic resource for sustainable competitive advantage for the public-service entities. This view accepts that a knowledge-oriented strategy could lead to the development of a more productive workforce. It is widely acknowledged in KM literature that organisations ought to combine the skills and expertise of their employees in order to improve OP, thereby remaining competitive and more productive.

It was hoped that this study would make a significant contribution to the existing body of knowledge in the field of KM in public-sector organisations. The researcher intended presenting an integrated picture of knowledge processes in the GDH. Furthermore, the study would contribute to both the theoretical and practical use of KM in the improvement of delivery of healthcare services in the context of the South African public-sector.

The study would over and above suggest ways of improving KM in the public-sector industry. The researcher believed that better KM practices would most probably enable the GDH to acquire and sustain a competitive edge. Of course, the GDH is given unqualified latitude to adopt the recommendations of the study, which are based on research findings.

Secondly, the study highlighted the critical KM requirement of creating a central knowledge repository for storing, accessing, organising and communicating knowledge to facilitate its retention, sharing, transfer, access and application. Thus, the developments in KM should be concerned more with organisational learning, especially the transfer, sharing and retention of KM best practices and the management of intellectual property to generate substantial gains in performance. The study recorded, analysed and determined whether KM indeed played a role in OP and HSD.

As it extended the knowledge base that currently exists in the field of KM, the study also intended to be a learning paradigm. The findings from this study could be utilised as a benchmark from which the public-sector organisations in South Africa should and could select the best route. It is delineated, while helping to raise awareness of KM among the public-sector employees and top management alongside the potential applications and benefits of KM.

Having justified its rationale to all the stakeholders, the research expanded the general knowledge base for further investigation into the area of KM.

On the other hand, the study advanced the understanding and perception of KM in the public-sector context and made recommendations to government departments that they should desist from compromising their strategic planning by basing decisions only on information easily accessible within their formal government information systems, government web sites, regulations, acts of parliament and government policies and regulations.

### 1.9. Originality of study

The explicitly-stated criterion for a PhD are usually an original and substantial contribution to knowledge (Charles, Farr-Wharton, von der Heidt & Sheldon, 2017). Thus, the researcher was again of the view that it is through originality, in greater or smaller increments, that knowledge advances.

Here, originality is premised on using KM as an effective solution to creating an environment where knowledge could be created, shared, transferred, retained and applied based on and applying the “ba” concept and the SECI model or organisational knowledge conversion theory set out by Nonaka, Toyama & Konno (2000). While the links between KM and OP and HSD have been examined independently, few studies have investigated the association between the three concepts in a public healthcare environment. This study was original in the sense that it critically examined the nature of the relationship or shared space of relationship and presented empirical evidence suggesting that the use of KM in an organisation would lead to an improvement in OP and service delivery.

No studies on the provincial government departments in the public healthcare sector in South Africa have specifically examined KM, which demonstrates the originality of the present study. In fact, as far as could be ascertained, no detailed and structured research into any aspect of organisational KM had been conducted as far as the role of KM in enhancing OP and HSD in selected provincial government departments in South Africa is concerned. This was the first study conducted on the South African healthcare provincial government structures investigating the role played by KM in enhancing OP and HSD.

Not only will it contribute to the field of KM research but it will also add to the existing literature on the progress of KM development in relation to OP and HSD in government health departments and other healthcare institutions internationally. The originality of this research therefore related to the study of a case in the GDH in order to understand how employees in the department could be major players in the knowledge processes. At the same time, they would be able to disseminate it and apply it in collaboration and in teamwork to improve the OP and HSD.

## 1.10. Research methodology and design

For this study, objectivism as an ontological stance provides a theoretical approach to understanding the nature of knowledge or what it means to know. This stance is informed by the view that there is an objective reality 'out there' and this research is about discovering this objective truth. Furthermore, positivism as an epistemological stance for this study provides a philosophical perspective that looks at the nature of existence and what constitute reality and this reality must be investigated through the rigorous process of scientific inquiry. This is discussed more in Chapter Three.

The research utilised a case-study of the GDH in the provincial government of the Gauteng province in South Africa. The methodology used was the mixed-methods approach, which integrates qualitative and quantitative research into one study. Both methods were used to collect and obtain data. The data was collected from primary sources by means of survey questionnaires and semi-structured interviews. The documentation was triangulated to assure the reliability of the findings. The design was aimed at discovering ways of using KM for the GDH while improving the OP and HSD. This is also further explained in Chapter Three.

### 1.1.9. Research methodology

Research methodology refers to a search for knowledge and explains how the research will be conducted (Castro, Kellison, Boyd & Kopak, 2010). It is the process of a scientific and systematic search for pertinent information on a specific topic to solve a research problem (Tashakkori & Teddlie, 2010b). The research methodology therefore explained how the research would be conducted. The approaches adopted in the literature review and empirical study to describe the phenomena and collect, analyse and interpret the data, are discussed below.

#### 1.10.1.1. Literature review

The intention was to accurately describe the phenomena by presenting the literature review. The constructs 'knowledge process capability" (knowledge

acquisition/creation, knowledge-sharing/transfer, knowledge retention/storage and knowledge application/use), “Knowledge infrastructure capability” (information technology, OC, OS), “OP” and “HSD” were described from the perspective of KM and public-sector reform. Included were organisational transformation, the learning organisation, a knowledge-based view and knowledge economy perspectives, drawing from literature in these fields of study. The factors that influenced OP and HSD were also derived from the literature review.

Although certain approaches that could be followed in improving OP and HSD formed part of the discussion, the focus was not directly on these approaches and strategies, as there is no “one-size-fits-all” solution for OP and HSD. This implies that specific solutions would differ from one organisation to the next, depending on where they intend focusing to improve OP and HSD.

A theoretical model based on the literature study was developed, which was subsequently tested in the empirical study by means of SEM.

#### 1.10.1.2. Empirical study

Following the literature review, the next phase of the research was an empirical study. The empirical study necessitated the planning and structuring of circumstances for conceptualising and operationalising the concepts, collection and analysis of data in such a way that they were relevant to the nature of the research. This involved the choice of data sources and variables (Chen, Wang & Lee, 2016).

The purpose of the empirical study was to test and validate the model developed in the literature study and develop a new model based on the findings of the empirical study. The research on the GDH OP and HSD involved an investigation into different groups of people. The context was the GDH OP and HSD, while the units of analysis were the different groups of staff and documents from which data were collected. This research methodology followed the steps suggested by Castro *et al.* (2010), which were:

- Deciding when and how often to collect data;

- Developing or selecting measures for each variable;
- Identifying a sample or test population;
- Choosing a strategy for contacting subjects;
- Planning the data analysis; and
- Presenting the findings.

Two factors, validity and reliability, were important in this context. Validity described the measure that accurately reflected the concepts to be measured. Reliability refers to the quality of the measurement method which suggests consistency in the measure of variables each time the measurement is repeated (Drost, 2011; Ihantola & Kihn, 2011). In Chapter Three, the manner in which validity and reliability were obtained is described in detail.

### 1.1.10. Research design

The aim of this study was to investigate the use of KM by the GDH for its transformation in order to improve OP and HSD in Gauteng. This task required a framework for a clear research design. A research design is defined by Ozawa and Pongpirul (2014), Drost (2011) and Ihantola & Kihn (2011) as a detailed plan for what has to be observed and analysed, why and how. This section discusses the "why" and "how". In order to arrive at a deeper understanding of KM, a combination of both quantitative and qualitative techniques using a mixed-methods approach was pursued and the SEM was developed to verify the theoretical model, as described in Chapter Three.

This approach was chosen because no similar study had been previously conducted in South Africa in the public healthcare sector. Further, the mixed-methods approach allowed for a more complete analysis of the research situation (Ozawa & Pongpirul, 2014). Because both the quantitative and qualitative methods of data collection have limitations, the researcher deemed that the use of the eclectic approach would neutralise or counterbalance some of the disadvantages found in both methods. Creswell (2014) suggested that supplementing quantitative data with qualitative data

would develop a contextual richness that would be valuable in this research and would improve the internal validity and interpretation of the quantitative findings.

The study also used the SEM, which combines multiple regression and factor analysis and focuses on the validation of the measurement model by obtaining estimates of the parameters of the model and by assessing whether the model itself provides a good fit with the data (Rosseel, 2012). The adequacy of the model was evaluated by means of goodness-of-fit measures, which determined whether the model being tested should be accepted or rejected (Ullman, 2013).

Because the research focus was on the public health system, the mixed-methods approach has its importance. It allowed the researcher to view problems from multiple perspectives, contextualise information, develop a more complete understanding of a problem, triangulate the results, quantify hard-to-measure concepts and capture a macro-picture of a system (Creswell, 2014).

According to Graff (2014), research questions in mixed-methods studies dictated the type of research design used, the sample size, the sampling scheme employed and the type of instruments administered, as well as the data analysis techniques used. Thus, the research question clearly reflected the need for the infusion of the objectivist and positivist perspectives, hence the choice of this methodology for this study.

Creswell (2014) confirmed that the use of the mixed-methods approach, using both qualitative and quantitative approaches, would lead to a better understanding of the phenomenon under observation. Thus, qualitative and quantitative data were collected simultaneously, using survey questionnaires, semi-structured interviews and organisational documentation in order to compare and contrast the different findings, producing well-validated conclusions.

The most appropriate instrument employed to gather quantitative data was a survey. Other data collection instruments used were semi-structured interviews, official GDH policies and strategy documents to obtain qualitative data in order to capture other KM parameters, which the survey questionnaire might have failed to capture.

### 1.1.11. Mixed-methods approach

The methodology applied in this study is underpinned by the positivist research tradition; hence the research is both qualitative and quantitative in nature. This methodology was appropriate for meeting the objectives of the study, which required the empirical measurement of relationships between KM and OP and HSD. Further discussion will follow in Chapter Three.

### 1.1.12. Sample

The sampling approach followed here was purposive, with elements of random sampling within the groups (Fetters, Curry & Creswell, 2013). A non-probability sampling method was complemented by probability sampling techniques. This method was regarded as most effective when a researcher has to study a certain domain Creswell (2014). Fetters *et al.* (2013) defined purposive sampling as a sampling method used in situations where the sampling is done with a specific purpose in mind. It is a technique that needs no underlying theories but a researcher decides what should be known and selects the people who are willing to provide the information by virtue of their knowledge or experience Creswell (2014). Purposive sampling thus requires information that demands a high degree of interpretation (Fetters *et al.,* 2013).

The purposive sampling techniques adopted in this study were not necessarily convenient sampling methods, which are generally accused of sampling bias but the inherent bias of purposive sampling contributes to its efficiency and remains robust even when tested against random probability sampling (Fetters *et al.,* 2013). The method was chosen specifically for the quality of data gathered; hence, the reliability and competence of the informant must be ensured. Thus, purposive sampling was favoured in this study, as it allows for variation and enables particular choices to be made relative to the situation to be investigated.

The targeted population consisted of all the permanent and contract employees in the general staff category, supervisory staff, managerial and executives employed in the GDH who had been working in these areas since 1994. The population was drawn from the GDH, selected hospitals and healthcare regional entities operating in

Gauteng Region A. The sample was chosen purposively as they are few in number relative to the entire staff of the GDH.

### 1.1.13. Questionnaire design

A measuring instrument was designed in the form of a questionnaire based on the model developed in the literature review. In other words, a qualitative approach in the mixed-method was adopted by first conceptualising concepts to convey their meaning in this context and then operationalising the concepts by developing operational definitions (Babbie, 2015). Thus, several factors, such as the length of the questionnaire, the wording and layout features would be taken into consideration to ensure the comprehensibility of the questionnaire, as suggested in the literature.

### 1.1.14. Data-collection methods

Qualitative and quantitative data was collected by means of three data collection techniques, namely, mixed-methods questionnaires with a combination of close-ended and open-ended questions by online survey (web-enabled and e-mail electronic survey); semi-structured face-to-face and telephonic mixed-methods interviews lasting 30 minutes each, recorded on audio-cassette; and mixed-methods secondary data, which involved searching various departmental documents.

Data collected from the questionnaire was demographical/biographical data, such as race, gender, position, years of service job, years of service with the department and academic qualifications. This information was used to compare the results of different groups but did not form part of the research objectives of the study. Data was collected concerning the extent to which KM and organisational factors (aspects) regarding OP and HSD take place in the department.

Triangulation techniques were used. This involved reconciliation of the survey instruments and data sources (Kern, 2016) to improve the validity, trustworthiness and quality of the inferences. The important benefit offered by the use of triangulation was the use of multiple methods, when the researcher combined different methods and

investigations in the same study, allowing the observers to partially overcome the deficiencies resulting from a one research design method (Kern, 2016).

### 1.11. Ethical considerations

The researcher was mindful of adhering to research ethics. This study complied with the UNISA research ethics policy (UNISA, 2007). The researcher's supervisor, Prof Sheryl Buckley, provided guidelines with the unique and complex ethical, legal, social and political issues as this study was specifically interested in the analysis of ethical issues that would be raised by the people involved as participants in this study. Also, the UNISA Policy on Research Ethics aims to ensure that:

- An ethical and scientific intellectual culture prevails among its employees and students and is followed in research practice.
- The rights and interests of human participants and institutions are protected. This is particularly important where information gathered has the potential to invade the privacy and dignity of participants and third parties and where participants and third parties are vulnerable owing to their youth, disability, age, poverty, disease, ignorance or powerlessness.
- Research is ethical where the following are involved: animals, genetic material, agriculture, living organisms and genetically modified organisms which may negatively affect humans, animals, plants or the environment.
- Research is ethical in increasingly diverse research areas. Examples are qualitative1 and quantitative2 research and collaborative research between international researchers and host country institutions. Such collaboration raises particular ethical issues, which include the possible exploitation of vulnerable populations, intellectual property rights of indigenous people and benefit for the host country.
- Ethical and scientific soundness of research is not compromised.

Because the participants in this study were government employees, careful measures were taken to ensure that the research did not deviate from the codes mentioned above. Measures taken included requesting permission for the HOD at the GDH to

involve the employees of the GDH in the survey and to distribute questionnaires to them; confidentiality in terms of the location of the survey; and respected the request from interviewee not to have the interview recorded or their names mentioned in the report. Also, formal permission was obtained from the GDH's head of department to conduct the study at the GDH; informed consent was obtained from the chief executives of the hospitals and the healthcare entities. Data collected from the study was treated as private and confidential and the identity of the participants was not revealed. Also, the participants in the interviews, because of their level of seniority in the GDH, requested that the interview conversation not be audio-taped.

### 1.12. Assumptions

The researcher made two assumptions during the research. The first was that, although the study might be limited in duration, the GDH senior managers and executives who were survey respondents in the survey would participate. Over and above the normal confidentiality policy of the GDH, senior government managers have to observe the legislations that govern the protection of government information, channel communication for public consumption through government structures set up to do exactly that (for example the Government Communications and Information System [GCIS]); the GDH falls under the political jurisdiction of the member of the executive council (MEC) who has a spokesperson and who is the only person authorised to talk about the GDH's matter to the public particularly on issues that are as politically charged as the poor HSD. GDH Senior managers and executives are public servants and are bound to follow protocol to obtain authorisation to talk about these issues.

Secondly, it was assumed that the survey respondents would provide accurate and honest information. The issue of poor HSD and general service delivery of basic services is a very political issue in South Africa. It, therefore, becomes very difficult at times to distinguish between a politically loaded statement and an operational fact. Senior managers and executives in the public-sector particularly in South Africa, are appointed from political ranks and are therefore answerable to their political masters and not necessarily to the public. Therefore, the information they give is not always accurate in some instances, particularly when it is a politically charged. The researcher

made sure to completely eliminate inaccurate and biased information by maintaining all the survey respondents' confidentiality and anonymity.

### 1.13. Limitations of the study

As demonstrated in Chapter One – Introduction, the GDH service delivery platform is made up of PHC, provincial hospitals, tertiary and quaternary hospitals with hospital utilisation and bed capacity of 15 834 beds (GDH, 2016) and 4,9 million and 553 153 outpatients and inpatients respectively. The total number of employees at the GDH and the related personnel cost for the period when this research was underway, was 66 968 and R20.5 billion (Table 6). Since GDH has such a huge and complex public HS, the budget and time did not permit to extend the scope of this study to beyond one region. Thus, the scope of this research was limited to Region A of the Gauteng HS. Additionally, the study did not fully investigate the use of KM or knowledge process issues among the GDH and all its healthcare service centres, statutory health bodies, hospitals all its employees in the Gauteng province. The results and conclusions were based only on the representative sample of the participating employees from the GDH, healthcare centres and statutory health bodies.

Table 6: Personnel cost by salary band for period 2015/2016

| Salary Band | Numnevr of employees | Personnel expenditure (R'000) | % of total personnel cost | average personnel cost pe employee (R'000) |
|---|---|---|---|---|
| Lower skilled (Level 1-2) | 7 118 | R 895 130,00 | 4.4% | R 125 755.8 |
| Skilled (Level 3-4) | 26 670 | R 4 955 433,00 | 24.1% | R 179 090.5 |
| Hihly Skilled (Level 6-8) | 14 329 | R 3 927 459,00 | 19.1% | R 274 091.6 |
| Highly skilled supervision (Level 9-12) | 122 262 | R 6 041 720,00 | 29.4% | R 492 718.0 |
| Senior and top management (Level 13-16) | 99 | R 1 158 028,00 | 10.5% | 21 798 262.6 |
| Contract (Level 1-2) | 4 | R 418,00 | 0.0% | R 104 500.0 |
| Contract (Level 3-5) | 71 | R 11 170,00 | 0.1% | R 157 323.9 |
| Contract (Level 6-8) | 704 | R 213 908,00 | 1.0% | R 303 846.6 |
| Contract (Level 9-12) | 3 047 | R 2 045 645,00 | 9.9% | R 671 363.6 |
| Contract (Level 13-16) | 18 | R 129 671,00 | 0.6% | R 7 203944.4 |
| Periodical remuneration | 711 | R 172 931,00 | 0.8% | R 239 516.6 |
| Abnormal appointments | 924 | R 21 512,00 | 0.1% | R 23 281.4 |
| **Total** | **66 968** | **20 573 025** | **100%** | **307 206.8** |

Source: GDH Annual Report 2015/2016

## 1.14. Outline of the thesis chapters

This thesis is structured into seven main chapters. Chapter One aims to provide the context, the identification of the current theory, an understanding of the current practices and the background to the study. Several areas are covered in detail, including the introduction, the background to the research problem, the research focus, the statement of the research problem, the research objectives, the research questions, the rationale for the study, the aim of the study, the originality of the study, the research methodology and design, the data analysis and presentation, the ethical considerations, the scope of the study, assumptions, the limitations and delimitations of the study, the outline of the chapters and the referencing style used in the thesis.

Chapter Two contains a review of the existing literature, which helps to clarify the nature of the problem. It also provides the basis for understanding the theoretical framework, as well as an overview of the empirical studies on which this research depends.

Chapter Three explains the research methodology and design for this research, the sampling procedures, data collection methods and methods of data analysis are explained.

Chapter Four presents the results and findings arising from the research investigation, incorporating data collected from the survey questionnaires, interviews and organisational documents, followed by an analysis and synthesis of the findings in Chapters Five and Six.

Chapter Seven presents a detailed synthesis of the research report in the form of a summary, conclusions and recommendations arising from the research.

## 1.15. Summary

This chapter is intended to provide an introduction to the study by highlighting the research problem and the context in which the investigation would be conducted. Ultimately, it provided the background to this study, giving reasons for the research

and the void in knowledge that exists and that ought to be gratified. The chapter also reflects on the research problem in accordance with the research questions and the research objectives so as to indicate the specific theoretical domain upon which the study hinges.

The researcher provides the basis for a justification of the research problem by linking ideas progressively. This clearly indicates the gaps to be closed by the research and gives statistical evidence of the context of the GDH public HS in South Africa. While justifying the need for this research, it was also possible to look at the originality of the study.

The chapter's principal focus was to understand the background of the Gauteng Province public HS and to demonstrate the need for the use of KM by the GDH for successful transformation and to demonstrate the extent to which the GDH could improve its OP and HSD.

A brief summary of the research design and methodology was given, as well as the data collection methods so as to answer the research questions and to meet the research objectives; the importance of upholding high ethical standards and the need for truth and accuracy of the data were also discussed.

## CHAPTER TWO: LITERATURE REVIEW

> An immense and ever-increasing wealth of knowledge is scattered about the world today; knowledge that would probably suffice to solve all the mighty difficulties of our age but it is dispersed and unorganized. We need a sort of mental clearing house for the mind: a depot where knowledge and ideas are received, sorted, summarised, digested, clarified and compared
>
> -HAG. Wells in the Brain: Organisation of the Modern World, 1940

### 2.1. Introduction

Chapter One introduced the research problem that dealt with the GDH, which has to transform itself in order to improve its OP and the quality of its HSD. KM was suggested as a tool worth considering. In this chapter, the researcher placed the research problem within its theoretical perspective and reflected on the various empirical studies conducted by other scholars which are directly or indirectly related to this area of expertise.

This chapter examines the background of KM and provides a detailed review of the literature that reflects on the serious challenges facing the GDH in improving OP and quality HSD using its organisational knowledge or intellectual capital. The literature review was conducted in a manner that would ensure that it formed the detailed foundation of this research. The discussion focused on investigating the breadth and depth of KM and other bodies of literature that could provide a multi-disciplinary perspective. It also considered the influence of KM on OP, HSD, public-sector reform and governance, organisational transformation and a knowledge-based view. The chapter also provided the perspective and influence of KM on other business practices, for example, OC, learning organisation and the knowledge economy.

The research problem was dealt with in its theoretical perspective and the researcher sought to give a deeper understanding of the KM concept, the use of KM principles for organisational transformation and the different schools of thought on the matter.

In addition, the researcher reflected on the various empirical studies conducted by other scholars who have a bearing on this study in the context of OP, public-sector reform and governance, HSD and knowledge-based views. All this culminated in the identification of the lacunas that instigated the present investigation. This was done in the context of studying the ways in which KM could be used in the successful transformation of the GDH for improved OP and HSD.

## 2.2. Theoretical framework

This section gives a description of the theoretical framework used in the study. Research in the social and management sciences does not have a tradition of adequately explicating the notion of conceptual and theoretical frameworks (Ngulube, Mathipa & Gumbo, 2014). Consequently, an understanding of the use of theoretical and conceptual frameworks may be limited. Theoretical and conceptual frameworks are often ignored or misunderstood because they are described and alluded to by many methodologists, very few of whom fully explain or clarify the two constructs (Leshem & Trafford, 2007) and their role in research.

Theory becomes a container into which data is poured. The research process begins with theory that is used to formulate research questions, followed by data collection and analysis (Ngulube *et al.,* 2014). The findings assist in confirming or rejecting the theory and a possible revision of the theory. The purpose of the theoretical framework for this study was to assist the researcher and shape any inquiry in the following ways:

- Serving as a basis of a research plan.
- Positioning the researcher within a scholarly discourse and linking the study to the broader body of literature.
- Providing a framework within which the problem under investigation can be understood.
- Shaping the research questions and helping to focus the study.
- Offering a plan for data collection.
- Operating as a tool to interpret research findings; and
- Providing a vehicle for generalisations to other contexts.

Thus, the role of organisational KM in the improvement of OP and HSD at the GDH is based on Nonaka's (1994) theory of organisational knowledge or intellectual capital, which set the basis of the research plan. This theory sets the foundation for much of the later theoretical work done in the field of business KM (Brennan, Kirwan & Redmond, 2016). This study exposed the researcher to the broader body of literature on KM. Consequently, it can be seen that the use of Nonaka's theory and others has compelled organisations to realise that knowledge and information are key strategic tools needed to position an organisation to function in the global knowledge economy and thus gain a competitive advantage.

Accordingly, Nonaka's (1994) theory on organisational knowledge addresses the interaction of tacit and explicit knowledge. Nonaka (1994) posits that organisational knowledge is created through a continuous dialogue between tacit and explicit knowledge. The theory is developed on the primes that tacit and explicit knowledge can be conceptually distinguished along a continuum and that knowledge conversion provides the explanation of how tacit and explicit knowledge interact.

Thus, the researcher linked the above theoretical framework to this study and to a broader body of literature through the discussion of organisational KM theories, such as the theory of organisational value creation, theories of KM, resource-based and organisational knowledge conversion theories, which are briefly defined in the next sub-sections.

Bawden (2008) expanded on this concept that the theoretical foundations of a discipline are the basis around which research and development of the discipline is focused for generating ideas. This research set out to understand the foundations and existing KM theories and schools of thoughts and at the same time investigated the applicability of organisational KM practices to the public-sector organisations. The use of theories in the study helped to create a plan for data collection and provided a vehicle for generalisations of this study to other contexts.

### 2.2.1. Theory of organisational value creation

The theory of organisational value creation has specific impact on knowledge processes for different organisations. The two key academic discussions addressing knowledge in organisations are the literatures of organisational knowledge or intellectual capital and KM. The researcher noted that traditionally, the fields of KM and intellectual capital have been studied separately. However, more recent scholars Handzic & Durmic (2015), have started to call for convergence between these disciplines in order to enhance organisational value creation.

Serious paradoxes are found to exist in KM due to competing unitary views of KM on a variety of concepts leading to a call to look at KM dialectically (Handzic & Durmic, 2015). Ultimately, according to Davenport, De Long & Beers (1998), the full power of knowledge can only be realised by taking a holistic approach to KM of conscious and systematic managerial activities for dealing with intangibles in an organisation.

Whereas, in KM literature, the term intellectual capital or organisational knowledge refers to intellectual material in its various forms that drives growth and value creation for an organisation. While the majority of KM literature addresses the mechanisms by which knowledge resources can be managed, the researcher noted that intellectual capital literature on the other hand, examines primarily the kind of intangible resources that contribute to value creation.

Subsequently, Kianto, Ritala, Spender & Vanhala, (2014) proposed several alternative models on how these knowledge-based issues affect OP and value creation. There are three generations of fragmented KM models, namely the first, second and third generation of KM. The first generation of KM described is technocratic. Kimble, De Vasconcelos & Rocha (2016) view the first generation of knowledge as placing emphasis on the role of information and communication technologies in KM systems which are used to support planning and decision making to meet customers' needs.

On the other hand, Handzic & Durmic (2015) hold an interesting position that second-generation KM is orientated towards people and organisations. It emphasises knowledge as a competitive weapon and sees KM as an organisation's strategy. The

essence of second generation KM is the combining of knowledge by networked employees, knowledge workers and communities of practice. It focuses on OSs and cultures that facilitate knowledge sharing. It also considers organisational environment for greater facilitation of knowledge sharing. These facilitators are reflected in the concept of "*ba*" introduced by Nonaka *et al.* (2000).

The third-generation KM argues that the effectiveness of a KM practice depends on the context in which the knowledge is being used. However, more recently, Edwards (2015) is of the view that rather than pursue a pointless quest for third generation KM, the most useful research over the past decade has taken the best from both the first and second generations to enhance the theory of organisational value creation

Subsequently, Kianto *et al.* (2014) concurs that the intellectual capital focuses on intangible resources that contribute to organisational value creation, typically in terms of human, structural and relational capital assets governed by an organisation, KM concentrates on the knowledge-related processes and management activities in organisations.

Thus, the researcher applied the theory of organisational value creation as described above and adopted a view that intellectual capital (static view) literature examines the kind of intangible resources there are in organisations, while the KM practices (dynamic view) addresses not only what the organisation possesses but also the mechanisms by which these resources can be controlled and managed to create value.

Therefore, these systematic management mechanisms of intellectual capital for organisational value creation can be called the KM practices of an organisation. For the context of this study KM was equivalent to organisational KM. On the same note, for the context of this study, organisational knowledge corresponded to intellectual capital.

### 2.2.2. Theories of knowledge management

Neuman (2014) defines a theory as a system of interconnected ideas that condenses and organises knowledge about the social world. It is a framework for thinking about a problem and may evolve into a statement of relationships among theoretical propositions. A theory helps people visualise the complexity in the world and explains why things happen (Neuman, 2014). Thus, theories of KM serve as a guide and lens to empirical research.

In this study, theories of KM helped in placing the aspects of organisational KM principles under close inspection. These theories provided comprehensive conceptual understandings of the issues being studied, such as how organisations operate and why people interact in certain ways. A similar viewpoint is given by Neuman (2014) that theories give researchers different perceptions from which to look at complex aspects and social issues, focusing their attention on different aspects of the data and providing a framework within which to conduct their analysis. These theories are discussed in detail in Section 2.4.

### 2.2.3. Resource-based theory

The resource-based theory rests on the premise that an organisation possesses resources that enable them to grow and achieve a competitive advantage whereby the exploitation of these resources by the organisation leads to superior long-term performances (Kraaijenbrink, Spender & Groen, 2010). Iskhar and Mahdaoui (2014) point out that human capital is not entirely specialised and can therefore be redeployed with new skills and competencies to allow the organisation's diversification in providing value to its customers.

Assumptions from the resource-based theory is that resources and organisational capabilities may be heterogeneously distributed across the organisation and that these differences may be long lasting. However, Amir and Parvar (2014) argue that resource-based theory assumes that organisations strive to differentiate themselves from rivals to earn and sustain a competitive advantage.

More recently Amir and Parvar (2014) stated that this theory (resource-based theory) maintains that an organisation's success is indebted to the joint assets, resources and capabilities that it owns and these forms the organisational differentiators.

From the resource-based theory perspective, Kraaijenbrink *et al.* (2010: 111) points out that "this advantage may result from development of capabilities over an extended period of time that become embedded in a company and are difficult to trade" and provide the organisation with both sustained economic rents and sustained competitive advantage (Barney & Clark, 2013).

While resource-based view is positioned relative to models of competitive advantage, there are other views to position resource-based view with evolutionary economic of variation, selection and retention of organisational resources (Kraaijenbrink *et al.,* 2010). Thus, the resource-based view in the context of this study is positioning the issue of competitive advantage for improving OP and HSD.

### 2.2.4. Organisational Knowledge Conversion Theory

This research is anchored in the theory of organisational knowledge conversion (Nonaka & Takeuchi, 1996), which views the interaction processes of tacit and explicit knowledge as an essential feature of organisational KM. This theory identifies socialisation, internalisation, externalisation and combination (SECI) as the four modes of interaction that facilitate KM in an organisation. The organisational conversion theory was crucial in the study because it set the basis for data collection. The SECI model is discussed in detail in Section 2.3.1 and 2.4.2 of this chapter. However, a discussion of the contextual setting of this study is presented in the next section.

## 2.3. Contextual setting

In previous discussions, the importance of a theoretical framework, as espoused by Ngulube *et al.* (2014) was highlighted. An overview of KM and all the associated concepts of the public-sector were highlighted in line with arguments suggested by scholars like Ikujiro Nonaka (1994), Takeuchi' (2013), Tseng and Wu (2012), Gaffoor

and Cloete (2010), Bergeron (2011) and Ermine (2010). In this section, the contextual setting of the phenomena and organisational KM practices in the GDH are presented.

### 2.3.1. Background to Knowledge Management

This section presents a discussion of the background to KM. The literature on KM will be reviewed in detail. The pioneering researchers such as Wiig (1997) and Grant (2015) laid the foundation for the concept of KM. The study of KM dates to more than two millennia ago, when philosophers and scientists attempted to understand the nature of knowledge. Most of those ancient studies discussed models and frameworks for KM that are still in use in the corporate world today. Of special note in the evolution of KM is the work of Michael Polanyi, Takeuchi and Nonaka (Grant, 2015). It was pointed out earlier that Nonaka's theory of organisational knowledge became the foundation of all organisational KM theories.

The area of KM has expanded rapidly over the last two decades, compelling organisations to realise that knowledge and information are key strategic tools in making informed decisions (Ermine, 2010). Many organisations began to recognise the importance of KM when it rose to prominence in the early 1990s (Grant, 2015). During that period, scientists and philosophers conducted extensive KM research and developed theories and models, with the specific aim of extracting a deeper understating of KM. Nonaka *et al.* (2000) changed Polanyi's concept of personal tacit knowledge by developing the socialisation, externalisation, combination and internalisation (SECI).

Because the SECI model's fundamental assumption is that tacit knowledge can be transferred and converted to explicit knowledge, it became the theoretical cornerstone and a widely-adopted KM concept in the first generation of Nonaka's work (Nonaka, 1994). In addition to Nonaka's SECI model, Nonaka *et al.* (2000) also suggested the need to create an appropriate environment in which knowledge could be created, shared, transferred, retained and applied. This is referred to as "ba", meaning a shared space for emerging relationships, which might be physical, virtual, or mental, providing a platform for advancing individual and/or collective knowledge.

The background to KM sets the basis from which this study explores the role of KM in the improvement of OP and HSD in the GDH. One could pose a question: Does the GDH create appropriate environments in which knowledge is created, shared and retained? The discussion in subsequent sections covers knowledge creation/acquisition, sharing/transfer, retention/storage and application/use to address the research objectives.

### 2.3.2. The essence of KM practices at the GDH

In this section, the role of KM in GDH is discussed, highlighting its importance and how it enhances OP and HSD. Knowledge and information are the key strategic tools needed to make informed decisions.

According to Mills and Smith (2011), KM provides improved OP and service delivery through more efficient, productive, innovative and quality processes. Enhanced OP and service delivery is reflected in more informed decision-making, streamlined processes and greater co-operation within the organisation (Mills & Smith, 2011). Thus, KM contributes to cost efficiency, improved OP and service delivery.

Some international KM studies by Mele and Ongaro (2014), Grindle (2013), Ryan, Zhang, Prybutok and Sharp (2012), Arora (2011) and Conteh (2010) were carried out in the public-sector. There have been a few recent studies on KM in HSD by Mkhize (2015), Coleman (2014), Mbhalati (2013), Gilson and Daire (2011), Gaffoor (2008), Gaffoor and Cloete (2010) and Mannie, Van Niekerk and Adendorff (2013) in the South African public-sector. However, limited research has been done to determine the impact of KM on OP and HSD.

With the transformation of the public-sector through the implementation of the public-sector reform initiatives, there is a significant increase in exigency on the public-service sectors and government departments to refine and improve the types and methods of services and service delivery in order to meet public needs. In their study, Gaffoor and Cloete (2010) highlight the importance of KM in local government. Public-sector organisations and government departments, which are in a position to perform

optimally and to deliver the best possible services, function effectively and operate in environments characterised by transparency and accountability.

Using the results from studies mentioned above and other relevant studies conducted elsewhere by scholars such as Handzic *et al.* (2016), Acheampong (2014) and Dewah and Mutula (2016) which focuses on strategies, topologies or the significance of KM, this study focused on demonstrating how OP and HSD could be improved in the GDH in South Africa through the use of KM Practices as identified in the studies referred to above. The study used findings from KM studies conducted elsewhere to gauge the impact of KM in the South African Provincial DoH. The studies included:

- KM practices and the role of an academic library in a changing information environment (Mavodza, 2010)
- Knowledge retention strategies in selected Southern African Public Broadcasting Corporations (Peterson, 2012)
- KM in local Government-Stellenbosch Municipality (Gaffoor & Cloete, 2010)
- KM practices in the South African public-sector, specifically national government (Mphahlele, 2010)
- The role of KM in enhancing OP in selected banks of South Africa (Chigada & Ngulube, 2015)
- KM practices in rural areas of South Africa (Mbhalati, 2010)
- KM practices at the Department of Defence in South Africa (Ramohlale, 2014)

These studies have been reviewed to assess the role of KM in the GDH organisation. These demonstrated that there is a tight relationship between organisational KM and OP. This is confirmed by researchers with a similar viewpoint as given by Tseng (2016); Tseng and Lee (2014); Tseng and Wu (2012); Mills and Smith (2011); and Matin and Sabagh (2015) that KM capability could be a critical mediator between external knowledge and OP. Thus, it can be seen that, when an organisation is equipped with an excellent KM capability, it is possible to acquire, transform, share and apply internal knowledge effectively to enhance OP. This denotes the importance of adopting a bone fide KM strategy.

The GDH as a government department, is still highly politicised, bureaucratic, hierarchical and protocol-driven. This could create serious inhibitors to the adoption and implementation of the KM paradigm GDH (Coleman, 2014). This was a common observation from the previous studies by authors such as Wiewiora (2011) and Chang and Chuang (2011). Recently we have seen new confirmatory results from scholars such as Peralta and Saldanha (2014), Al-busaidi *et al.* (2014), Zaied *et al.* (2012) who concur that the creation and management of knowledge requires a concerted strategy and an appropriate environment. These views are supported by Soliman (2015) in his latest book entitled "From KM to Learning Organisation to Innovation: The Way Ahead" and where he postulates that an appropriate environment means an environment in which top management pays attention to people, culture, working conditions, motivation, organisational strategy, OC, OS and information technology infrastructure. Thus, management is required to create an environment that encourages and supports KM principles and eliminates the cultural barriers that exist in organisations today.

The discussions in the literature review also highlights how organisations deal with KM and the importance of creating a KM-based organisation.

What then is KM?

## 2.4. Knowledge Management

> Knowledge is experience. Everything else is just information.
>
> Albert Einstein

Knowledge in today's organisation is an unquestionable strategic business imperative and has been acknowledged as a critical asset to any organisation. The new paradigm is that knowledge must be shared in order for it to grow. It has been shown that an organisation that has created an environment and culture of knowledge-sharing grows stronger and becomes more competitive (Uriarte, 2008).

As early as the 1980s and 1990s, Nonaka (1994), Nonaka & Takeuchi (1995) and Prusak (1996) strongly argued and demonstrated that organisations can effectively

use knowledge to create value and that knowledge is the fundamental building block for OP, growth (McGurk & Baron, 2012) and service delivery. What, then, is knowledge and how should organisations manage and use it to improve OP and service delivery?

### 2.4.1. What is knowledge

> To share an asset, usually it must first be divided. But knowledge is one of the few assets that multiply when shared.
>
> Rudie Harrigan and Dalmia (1991; 5).

In order to understand KM, it is necessary to first understand the nature of knowledge. Vast amounts of literature were published and academics devoted a lot of time to defining what knowledge actually is, and how it differs from data, information and wisdom (Cardoso, Meireles & Peralta, 2012).

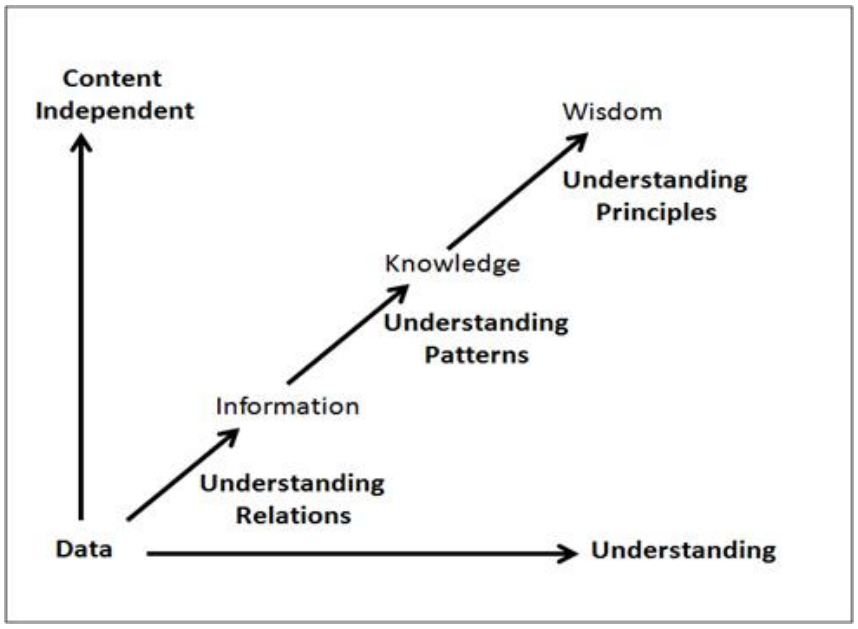



Figure 8: Conceptual Progression from Data to Knowledge (Uriarte,.2008).

Data is a symbol that exists in any form, usable or not and has no significance beyond its existence. It is a number, word or letter without any context. Alone, it has no meaning. On the other hand, information is a collection of data or relational connection of data that has been given meaning (see Figure 8). Information is therefore a relationship between data that is dependent on context for its meaning (Uriarte, 2008).

Knowledge, then, is the appropriate collection of information such that its intent is to be useful.

Figure 10 provides a conceptual progression from a collection of data to creating meaningful information, the collection of information to creating of knowledge and ultimately wisdom. The cognitive and analytical process of understanding supports the transition from data, to information, to knowledge and finally to wisdom. In general, as depicted in Figure 10, information remains relatively static in time and linear in nature until we reach a level of understanding where currently-held knowledge is synthesised with previously-held knowledge to create new knowledge. Knowledge is information evaluated and organised in the human mind so that it can be used purposefully (Uriarte, 2008).

Human activities are inconceivable without knowledge. With such a huge scope, and with types of knowledge being as wide and varied as all the varieties of human pursuits, it is knowledge which plays a crucial role in the proper functioning and success of organisations for competitive advantage (Wenger, 2011).

Although there is an abundance of literature and many articles written about the importance of knowledge in organisation, it was the view of the researcher that it is equally important to understand how the knowledge created by individuals is crystallised as part of the knowledge repository of the organisation. Dalkir (2011), using Polanyi's (1966) distinction between tacit knowledge and explicit knowledge, contends that individuals create and acquire knowledge by actively creating and organising their own experiences.

Dalkir (2011) explains further that these distinctions between tacit and explicit knowledge (Table 7) lead to the understanding that tacit knowledge is personal and resides in an individual’s head. Thus, it amounts to the individual’s know-how and skills. It is content specific and consequently very hard to formalise, document and communicate. On the other hand, explicit knowledge refers to knowledge that is stored and can be shared in formal and varied modes of information communication (Dalkir, 2011).

Table 7: Two type of knowledge

| **Tacit Knowledge** (Subjective) | **Explicit Knowledge** (Objective) |
|---|---|
| **Knowledge of experience** (body) | **Knowledge of rationality** (mind) |
| **Simultaneous Knowledge** (here and now) | **Sequential Knowledge** (there and then) |
| **Analog Knowledge** (practice) | **Digital Knowledge** (theory) |

Source: The knowledge Creating Company (Nonaka & Takeuchi, 1996)

Table 7 shows, on the left, the features generally associated with tacit knowledge, which tends to be subjective, while the corresponding features on the right are generally associated with explicit knowledge, which tends to be objective.

From the distinction between the two types of knowledge Table 7, it would appear that tacit and explicit knowledge are two different and non-complementary concepts. On the contrary, Huang *et al.* (2014) believe that tacit knowledge and explicit knowledge are not mutually exclusive but the two concepts suggest that the transformation of knowledge into information is simply a matter of codification.

This is how the organisational competitive advantage will be defined in terms of the advantage of knowledge an organisation creates for the future (Dalkir, 2011) and how competencies, capabilities and skills are created as a source of sustainable competitive advantage (Grant, 2015). As a result, the only true competitive advantage will reside among those who are equipped with the knowledge to identify new problems and resolve them.

The researcher therefore, argued that knowledge as an indispensable, possibly irreplaceable asset of the organisation and is fundamental to OP and future organisational success. Thus, it can be seen that organisations are becoming more knowledge-conscious and there is a growing number of examples to illustrate the

critical role of knowledge in organisations (Amarakoon, Weerawardena & Verreynne, 2016). The key findings of various research are that knowledge is the key factor for achieving competitiveness (Andreeva & Kianto 2012; Amir & Parvar, 2014); it is the driver of the global knowledge economy (Mkhize, 2015; Pandey & Dutta, 2013; Mannie *et al.,* 2013) and that knowledge is the basis of effective organisational transformation to respond to changing needs with creativity and innovation (Al-Hakim & Hassan, 2013; Ekionea *et al.,* 2011).

The above-mentioned knowledge fundamentals call for a shift in strategies and operational tools for OP, service delivery and business operations in general. The researcher expected that they would also raise questions as to how knowledge is created or acquired and how it is processed by organisations. Thus, such a shift will involve viewing knowledge from a different perspective or knowledge-era or knowledge economy and knowledge society as discussed in previous paragraphs.

The only thing that gives an organisation a competitive edge – the only thing that is sustainable – is what it knows, how it uses what it knows and how fast it can know something else (Davenport & Prusak 2000: 6).

Organisations in the knowledge economy have become knowledge organisations. For example, healthcare is a highly specialised discipline of knowledge workers, in which a tremendous amount of creation, learning and sharing of information and knowledge among healthcare professionals occurs. In today's knowledge era, healthcare knowledge is quickly becoming the healthcare sector organisations' sustainable competitive advantage. This resource must be shared and transferred within broader communities.

Healthcare services, in common with many public services, cannot be delivered by a single organisation or PHC facility. The knowledge creation processes that underpin these activities, in the context of HSD, happens in both the formal and informal relationships within the HS. The creation of this organisational knowledge typically commutes between the two extremes of formal and informal. The knowledge creation spiral arises thus among individuals, groups and the organisation through the integrated activities of SECI (Nonaka & Takeuchi, 1996).

The creation and transfer of knowledge transfer thus occurs from individual(s) to group(s), from group to group and from group(s) to organisation. The researcher was of the view that during the knowledge creation process, individuals need a clear understanding of the task and the information before creating knowledge from different sources in the organisation. A similar viewpoint is given by Ho, Hsieh & Hung (2014) that individuals should also be share organisational core and general knowledge through various formal and informal structures. In brief, the researcher assumed that increasing the efficiency and knowledge-intensity of knowledge circulation allows organisations to continuously create new knowledge and new competitive advantages.

Effective knowledge creation and acquisition; sharing, transfer and enrichment; retention, storage and retrieval; and dissemination in the GDH are of paramount importance in the advancement of the HS in the public-sector. Effective knowledge creation and transfer consists of the delivery of factual knowledge about the topic and exposure to tools and thinking processes required to make critical decisions on effecting change and transformation for OP and quality HSD.

Thus, from the above discussion, it is clear that knowledge is acknowledged as being imperative in organisational strategy and a vital resource to support the organisational processes and decision-making capabilities for a sustained business. For the GDH to successfully transform itself, to fulfil its strategic objectives, to achieve superior OP and HSD, it must manage and integrate its knowledge assets into its operational activities.

The organisation’s management of knowledge will focus on KM principles and competitive advantage.

### 2.4.2. Knowledge management principles

Having put into perspective the nature of knowledge and KM in the context of this study, it must be stated that there is no universal definition of KM by experts (Uriarte, 2008). KM still largely remains an elusive concept and, as Jurburg, Viles, Jaca and

Tanco, (2015) observes, many regard it as merely another technology, a “nice-to-have” concept or even another one of those IT “buzz” words.

Four main processes of KM are referred to in many definitions, namely knowledge creation/acquisition, knowledge sharing/transfer, knowledge storage/retention and knowledge application/use. Many scholars define KM as the way data, information and knowledge are captured, stored and shared and how they are applied to assist the organisation in strengthening its competitive advantage. The one definition Gurteen (1998: 6) gives is that:

> KM is an emerging set of organisational design and operational principles, processes, OSs, applications and technologies that helps knowledge workers dramatically leverage their creativity and ability to deliver business value.

Supporting this definition by Gurteen (1998), Claver-Cortés, Pertusa-Ortega and Zaragoza-Sáez (2007: 46) defines KM as:

> …the set of business policies and actions undertaken for the purpose of favouring the creation of knowledge, its transfer to all organisation members and its subsequent application, all of it with a view of achieving distinctive competencies which can give the company a long-term competitive advantage.

The definitions clearly indicate that KM is a business strategy to position and adapt the organisations for change. Thus, for the purpose of this study, KM is understood to be an ongoing, persistent, purposeful network of interactions among organisational components through which the participating components aim at managing organisational knowledge in order to produce a unified whole and transmitting the enterprise’s knowledge base.

Thus, the new world of business requires these organisations to manage using the sum of its organisational components to adjust, adapt and transform themselves to maintain sustained, dynamic and radical changes in the business environment. Events

in the business environment are changing and moving so rapidly that it becomes increasingly difficult to predict and prepare for the future in a programmed and logical way.

The researcher believes that this requires the recognition that people live in the knowledge era and that organisations are overwhelmed by an information and knowledge overload (Cohen & Olsen, 2015). The speed of capturing, processing and using knowledge and the use of internal business knowledge by company's intellectual capital – people -, forms the key to valuable sources of knowledge to make informed and appropriate decisions who remain critical to OP (Al-Hakim & Hassan, 2014; Al-Bahussin & El-garaihy, 2013).

Many executives would rather invest a considerable amount of money in robust, modern and sophisticated IT infrastructures in managing company information (Ayoub, 2014). What these executives often fail to consider as a business imperative (Nazari, 2014) and fail to include in the transformation of their organisations is the intangible assets that are not reflected in their balance sheets (Handzic & Durmic 2015; Evans *et al.,* 2015) or even reported in the monthly meetings. These are the organisation's reputation (goodwill), intellectual property, knowledge, skills, capabilities, expertise, culture and loyalties, which will determine its success or failure (Moghaddam *et al.,* 2015) of any transformation process. Consequently, knowledge assets are never or seldom documented and rarely used to complement the explicit knowledge stored in companies' sophisticated technologies and infrastructures.

Innovative researchers such as Dalkir (2011) indicated that, faced with transformation for the improvement in OP and service delivery, organisations often overlook the symbiotic relationship between tacit and explicit knowledge. and its importance in making appropriate decisions for organisational stability and competitive sustainability (Chuang *et al.,* 2013).

Table 8: A comparison of Tacit and Explicit knowledge

**A Comparison of Tacit and Explicit Knowledge**

| Characteristics | Tacit Knowledge | Explicit Knowledge |
|---|---|---|
| Nature | Personal Context specific | May be codified, written |
| Formality | Hard to formalise, codify record, code or express. | Is formalised through the process Of explanation or interpretation of tacit knowledge |
| Location | In the middle of workers | Manuals, reports, drawings databases, e-communications, charts, films, etc |
| Conversion Process | Conversion to explicit knowledge occurs in social processes, including externilasation in stories | Converted back to tacit knowledge through personal understanding, absorption, or remembering |
| IT Influence | Difficult for IT to play a role in tacit knowledge, sharing is personal and takes place in social situations | fully supportable by IT and ICT |
| Medium | Needs a rich communications environment, a culture of sharing and trust | Can be transferred through normal communications media |

The distinction between tacit and explicit knowledge has been thoroughly evaluated by the authors of the literature dealing with KM and the distinction is briefly reviewed here. Table 8 shows that tacit knowledge exists only in the minds of the employees with education and years of experience. It is difficult to express it in its full form or transmitted it via books or discovered from computers.

The conversion of tacit knowledge to explicit knowledge occurs mainly in social processes. Explicit knowledge, on the other hand, is knowledge that can be found in books and documents. It is the knowledge that can be codified and can be stored in computers, accessed and distributed. Mao *et al.* (2016) maintain that a tenet of the resource-based view of the organisation is that tacit knowledge often lies at the core of sustainable competitive advantage. They see tacit knowledge as complementary to explicit knowledge. This they perform by referring to the context or source from which more forms of explicit knowing evolve.

However, Oğuz and Elif Şengün (2011) suggest that tacit knowledge comes from interactive collaboration, innovation and sharing of knowledge and that interaction

between tacit and that explicit knowledge becomes possible as the process character negates the notion that these two kinds of knowledge are diametrically opposed.

#### 2.4.2.1. Tacit knowledge

Tacit knowledge is described as knowledge that is primarily personal and is stored in people's mind (Oğuz & Elif Şengün, 2011). Ermine (2010) further indicates that tacit knowledge is accumulated through study and experience and includes subjective insights, intuitions and conjectures.

Tacit knowledge can be viewed as the intuitive understanding that people use to guide their behaviour, particularly in response to unexpected challenges and complex situations. It has been described with both dichotomous and continuous characteristics (Murray & Hanlon, 2010). At the extreme poles of these descriptions, tacit knowledge in this paradigm is less tangible than explicit knowledge. Individuals are more knowledgeable and often find it difficult to explain to others. This additional knowledge that they have is generally described as tacit knowledge. It is intuitive and synthesised in people's minds, hard to verbalise and largely unarticulated (Parminter & Neild, 2013). Thus, tacit knowledge may be hard to communicate but it is deeply rooted in action, involvement and commitment within a specific context.

One of the challenges why tacit knowledge is difficult to transfer or transmit is that tacit knowledge is causally ambiguous which is the precise reason for its success and failure (Parminter & Neild, 2013). It is generally assumed that tacit knowledge is both costly and time-consuming to transfer. The more tacit the knowledge, the more ambiguous it will be by nature. Increasing the proportion of tacit knowledge associated with a capability is likely to increase its ambiguity due to it being even more complex in breadth and depth than the knowledge it is replacing (Parminter & Neild, 2013).

The accumulation of tacit knowledge is highly contextually dependent and the expression of tacit knowledge is also situationally dependent (Parminter & Neild, 2013). Therefore, different people in different situations may learn different things from the same sources of tacit knowledge. Explicit knowledge comes in a number of forms, for example books, manuals and documents whereas tacit knowledge is often

incomplete and must be understood by the receiver. All of these factors contribute towards the indistinctness of tacit knowledge and the complexity of its transfer (Murray & Hanlon, 2010).

Tacit knowledge transfer is also made more complex because it can be affected by the source, the recipient, the practice and the businesses context (Murray & Hanlon, 2010). Therefore, the more reliable, credible and trustworthy the source the more likely it will be for recipients to be responsive to them. If the recipient cannot comprehend the knowledge due to a lack of understanding, then they are unlikely to learn. The relationship between the source and the recipient must be positive in order for there to be complete openness about knowledge exchange (Oğuz & Elif Şengün, 2011).

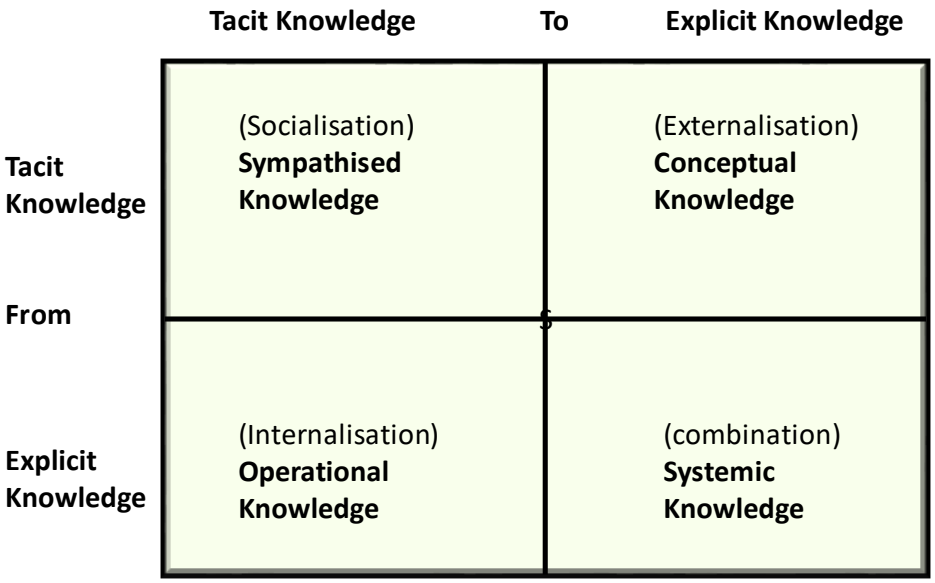



Figure 9: Contents of Knowledge created by four modes
Source: The knowledge Creating Company (Nonaka & Takeuchi, 1996)

Nonaka *et al.* (2000) developed a model describing how it may be possible to extract tacit knowledge and make it explicit for transfer. The model is an iterative and spiral process (Figure 9) of SECI based on the organisational knowledge conversion theory alluded to in Section 2.2.4. In the Figure 11, they explain that in the process of socialisation, individuals can acquire tacit knowledge directly through interaction with others and sharing experiences.

Externalisation is the process of articulating tacit knowledge into an expressible form, definite and specific ideas and thoughts in a more communicable form and language. Internalisation, on the other hand, is the reverse process of learning and understanding explicit knowledge from discussions and documents and internalising this experience and know-how into tacit knowledge. Combination is the process of arranging knowledge according to tacit knowledge and explicit knowledge, thereby creating universal knowledge. The creation of this organisational knowledge is a continuous and dynamic interaction between tacit and explicit knowledge.

The Nonaka model is more suitable for organisations. However, it is considered by some authors to be too complex to cover the transfer of tacit knowledge. Only the socialisation step in the Nonaka model is specific to tacit knowledge (Murray & Hanlon, 2010). Even then, the Nonaka model can only be applied to tacit knowledge that is able to be explicated. Some tacit knowledge (tacit implicit) may be just too inaccessible and personal to be codified as required in the Nonaka organisational model.

#### 2.4.2.2. Explicit knowledge

In contrast, explicit knowledge is described as knowledge that has been documented and consists of well-defined, formalised procedures or rules and can be transmitted via technology. Given the above differentiation between tacit and explicit knowledge, Figure 11 shows the creation of knowledge through the interaction between tacit knowledge and explicit knowledge through the four modes of knowledge conversion from the description of the SECI model by Nonaka *et al.* (2000).

The primary focus in attaining the competitive advantage and the sustainability of the organisation lies with the recognition and acknowledgement of the relationship between tacit and explicit knowledge, the applications both have and knowledge transfer (Grant, 2015). Grant (2015) argue that, if knowledge is the primary resource upon which competitive advantage is founded, then its transferability and application determine the organisation’s long-term success.

Nazari (2014) emphasises that, if organisations are not managing knowledge, tacit and explicit, they are not paying attention to their business. A lot of vital business

information is not documented but resides in people's minds. When managers make decisions, they rarely or hardly ever communicate with the ground level/operational staff, who have the full information required to understand the implications or impact of whatever decisions are made. It is essential to remember that knowledge is the most vital raw material, a source of added value and the most valuable output for any organisation (Handzic & Durmic, 2015).

The long-term competitive advantage and performance improvement of the GDH will be a result of acknowledging the importance of the relationship between tacit and explicit knowledge, KM, the culture of sharing and disseminating information and a culture that fosters learning in order to make the GDH more productive, more effective and more successful (Dalkir, 2011). Dalkir (2011) also confirm that the use of KM in organisations will enhance collaboration, increase productivity and encourage innovation, thereby improving service delivery

Thus, the key realisation is that the role played by KM stems from acknowledging that organisational knowledge is a strategic, corporate asset that needs to be retained at all cost, regularly updated, disseminated and applied to future organisational problems. Another publication by Al-Bahussin and El-garaihy (2013) suggests that, in order to improve HSD at the GDH and related healthcare centres, researchers need to take a strategic view of the organisational KM requirements and the management of knowledge as a strategic advantage (Al-Hakim & Hassan, 2013).

Kim, Newby-Bennett and Song (2012) suggested that to apply the key principles of KM as per the definition of KM at the beginning of this section is to create a powerful tool to inform strategic decisions. KM should cater for the critical issues of GDH adaptation, survival and competence in the face of increasingly continuous environmental change and turbulence. Therefore, the management of knowledge in the GDH should be framework for designing organisational objectives, management structures and business processes and environments (Dalkir, 2011) so that the organisation may use its organisational knowledge or intellectual capital or what it knows, to learn and to create value for its customers and the community.

In order to build a learning organisation, the KM design processes will have to encompass all the three KM principles of knowledge creation or acquisition or capture process, sharing or dissemination process and application or use.

#### 2.4.2.3. Knowledge creation/acquisition

Many researchers emphasise that, in competitive environments, knowledge is the main source of competitive advantage of organisations. Mahmoudsalehi (2012) further confirm the point that, without the constant creation of knowledge, a business is condemned to poor performance. In the current knowledge era, knowledge has been acknowledged as a valuable asset (Cardoso *et al.,* 2012) and, for that reason, organisations are searching for ways of constantly creating, managing and possessing this knowledge.

Knowledge creation therefore refers to the development of new knowledge from data, information, or prior knowledge. The creation of new explicit knowledge relies directly on combining prior knowledge, whereas the discovery of new tacit knowledge relies on socialisation (Pinho, Rego, Cunha & Miguel Pina, 2012). Thus, organisational knowledge creation is the process of making available and amplifying knowledge created by individuals as well as crystallising and connecting it to an organisation's knowledge system.

This section gives a description of processes linked to knowledge creation. According to Acheampong (2014) and Dalkir (2011, organisations are facing complex challenges of improving, among other things, their OP and service delivery and on-going demands for organisational transformation and governance structure and knowledge creation).

It has become crucial for organisations to understand the key variables that play a decisive role in an organisation's performance. The field of a knowledge-based view which is discussed in detail in Section 2.9 of this chapter provides a useful theory for addressing this matter. The importance of knowledge as a key source of competitive advantage is now well-established in management studies, as suggested by the growing body of literature focusing on knowledge creation. According to the

knowledge-based view, an organisation's competitive advantage is rooted in its own ability to create and share knowledge (Grant, 2015).

To explain the dynamic processes of knowledge creation and the strategies for creating it become important issues in understanding and clarifying organisational behaviour (Martins, 2010). Organisational knowledge creation is the capability of a company as a whole to create new knowledge, disseminate it throughout the organisation and embody it in the services it provides.

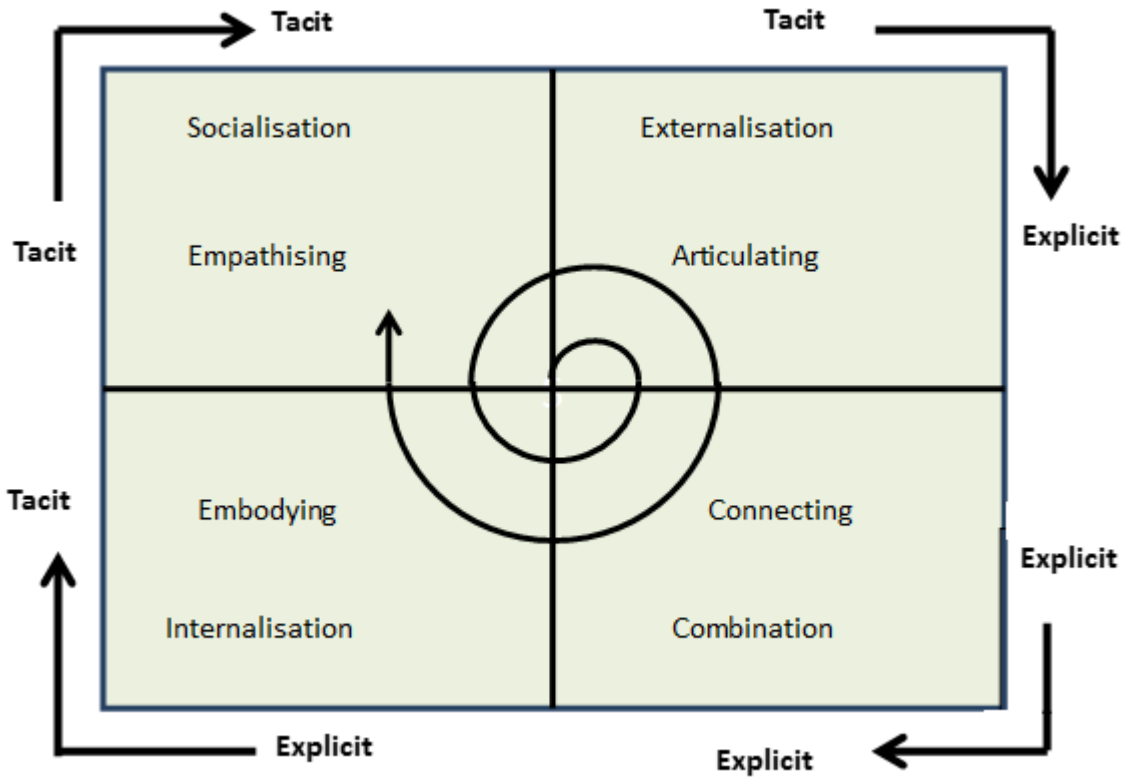



Figure 10: The SECI Process
Source: SECI, Ba and Leadership: A Unified Model of Dynamic Knowledge Creation (Nonaka *et al.,* 2000).

For this study, it was decided to use the work by Nonaka and Takeuchi (1996) to describe the knowledge creation process, mainly because their work is widely accepted in a variety of management fields and IT (Mahmoudsalehi, 2012) and it extends the knowledge creation process to knowledge transfer. Because the creation

of new knowledge and the transfer of existing knowledge have become two major management tasks, it is important that they should be considered together.

In their knowledge creation model (SECI) (Figure 10), knowledge creation is seen as a continuous process whereby individuals and groups within an organisation and between firms share tacit and explicit knowledge. Nonaka and Takeuchi (1996) proposed the SECI process that explores knowledge creation through the conversion between tacit and explicit knowledge.

From the theory of knowledge creation (the SECI process), a spiral process of socialisation, externalisation, combination and internalisation create knowledge (Nonaka *et al.,* 2000). Socialisation refers to the conversion of tacit knowledge to new tacit knowledge through social interactions, shared mental models, technical skills and shared experiences among organisational members. Typically, it occurs from an apprenticeship rather than documents or manuals (Nonaka *et al.,* 2000)

Externalisation refers to the conversion of tacit knowledge into new explicit knowledge. Typically, it can be seen in the process of concept creation and is triggered by dialogue or collective reflection. The term combination refers to the creation of new explicit knowledge by merging, categorising, reclassifying and synthesising existing explicit knowledge, thereby allowing it to be shared by others.

Combination also refers to the conversion of explicit knowledge collected from inside or outside the organisation and then combined and processed to form new knowledge (Nonaka *et al.,* 2000), which is then shared among the members of the organisation.

Internalisation refers to the creation of new tacit knowledge from explicit knowledge where explicit knowledge can be internalised into individuals' tacit knowledge or technical know-how, thus becoming a valuable asset (Nonaka, 1994; Nonaka *et al.,* 2000). The SECI process of knowledge creation describes dynamic interaction as depicted in Figure 12, which shows these four modes of knowledge conversion in the spiral of knowledge creation (Nonaka *et al.,* 2000).

Recent emphasis from Nonaka *et al.* (2014) is that to achieve an improvement in OP and service delivery, organisations should attempt to associate OP and service delivery strategy with the knowledge creation process. In this study, the researcher, used the concept of knowledge creation by recognising the importance of knowledge-sharing in the creation of new knowledge. Thus, through shared knowledge, individuals acquire knowledge they earlier lacked and they can then synthesise this knowledge with their prior knowledge to create new knowledge.

Furthermore, it is important to note that the movement through the four knowledge conversions forms a spiral of knowledge, which becomes larger as it goes through the ontological levels (Nonaka *et al.,* 2000). In addition, both the theory of knowledge creation and knowledge-sharing in the organisation argue that KM has an impact at various levels, including the OP and service delivery (Mahmoudsalehi, 2012).

The vital knowledge creation processes of SECI, will provide a key to the GDH understanding of the dynamic processes of knowledge creation in the relationship between the use of KM for improving OP and service delivery. According to the theory of knowledge creation (Nonaka, 1994; Nonaka *et al.,* 2000), the GDH cannot create knowledge itself; instead, individuals' knowledge must be the basis of the GDH organisational knowledge creation.

This theory emphasises knowledge creation through a dialectical process, with contradictions synthesised through interactions. It also distinguishes KM using IT among individual, group, organisations and inter-organisational levels of knowledge creation (Sallán, de Álava, Barrera-Corominas & Rodríguez-Gómez, 2012).

#### 2.4.2.4. Knowledge-sharing/transfer

As briefly explained in the previous sections, organisations are becoming increasingly aware of the importance of knowledge-sharing if they are to survive, remain sustainable and relevant (Yusof *et al.,* 2012). The GDH and the public-sector organisations in general are mainly knowledge-intensive organisations, and to exploit their knowledge, effective knowledge-sharing among the different departments and knowledge workers is essential (Matin & Sabagh, 2015) and the ability to transfer

knowledge internally is critical to the organisation's ability to build a competitive advantage through scarce internal knowledge.

By sharing knowledge across organisations, workers can improve their performance and the quality of the service they provide (Sandhu, Kishore Jain, Kalthom & Ahmad, 2011). This view was also expanded further by Aboelmaged (2014) that managers should ensure the creation of the learning organisation and allow the organisation's collective knowledge to be more accessible to all the employees and that the knowledge-sharing process must be more concerned with the flow of knowledge in organisational KM.

A similar viewpoint by Lam & Lambermont-Ford (2010) is that sharing knowledge is the most critical component throughout the entire KM process in an organisation and that the ability to share knowledge is a key component of the KM principles. Thus, effective flow and application of knowledge through the knowledge-sharing process could lead to improved OP and service delivery.

Therefore, the challenge facing organisations is that of sharing organisational knowledge, which is becoming increasingly important as organisations endeavour to enhance their performance and remain competitive (Yusof et al.*et al.,* 2012). Referring to challenges facing organisations in sharing knowledge, Yusof *et al.* (2012), argued that a review of past research on this topic by among others Szulanski *et al.* (1996), shows that most of the knowledge-sharing initiatives have focused on the relationship between and among factors that influence such initiatives, like technology and the role of humans.

Pioneering researchers such as Szulanski (1996) suggest that four factors are likely to influence the difficulty of knowledge transfer and these are the nature of the knowledge transferred, the source, the recipient and the context in which the transfer takes place. Firstly, the difficulty of transferring knowledge could originate from the ambiguity of knowledge itself. Secondly, one notes the reluctance of the source to share information for fear of losing ownership, privilege or superiority. Thirdly, is the reluctance by the recipient to accept knowledge through passivity, feigned

acceptance, foot dragging or outright sabotage. Fourthly, organisational knowledge transfer largely depends on the context that either facilitates or hinders development.

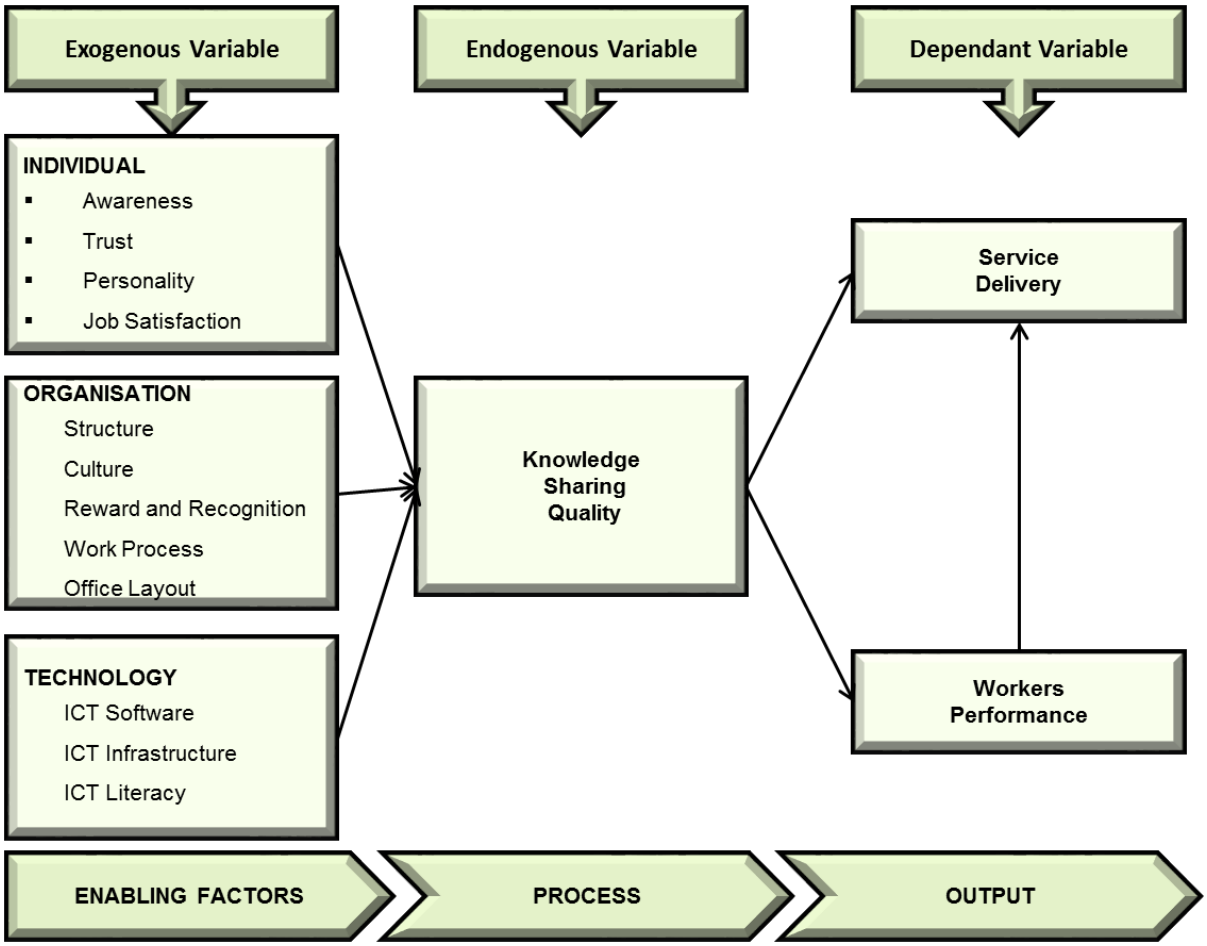



Figure 11: Holistic and Integrated Knowledge-Sharing Model.
Source: Knowledge-sharing in the public-sector in Malaysia – Holistic Model (Yusof *et al.,* 2012)

Referring to Szulanski (1996), Yusof *et al.* (2012) proposed instead a holistic and integrated knowledge-sharing model (Figure 11). It shows the relationship between the enabling key factors influencing the quality of knowledge-sharing, namely the individual, the technology and the organisation, which together are called the exogenous variable, whereas the quality of knowledge-sharing (process) is called the endogenous variable. On the extreme right of the diagram are the dependent variable, service delivery and the workers' performance (output), which are the results of the knowledge-sharing process.

This model is viewed as holistic (Yusof *et al.,* 2012) in that it combines the enablers (input), the quality of knowledge sharing (process) and workers' performance and service delivery (output). The enablers are mechanisms that promote individual and organisational learning and facilitate inter- and intra-group knowledge sharing. Process refers to how workers share knowledge on job specifications, skills and related information with their colleagues. Output alludes to the impact gained from the shared knowledge. It examines the effect of the individual, the organisation and technology on the quality of knowledge sharing. The latter focuses on investigating three relationships, namely the relationship:

- between the quality of knowledge sharing and service delivery
- between the quality of knowledge sharing and worker's performance
- between workers' performance and service delivery

As captured in the model, while the role of technology in facilitating knowledge-sharing through its supporting infrastructure is undeniable (Yusof *et al.,* 2012), the model shows that such support cannot disregard the role of the human individual, a critical factor in any organisation. Acheampong (2014) contend that the absence of the individual, technology, or the organisation, would result in an incomplete knowledge-sharing process.

To this end, Yusof *et al.* (2012) proposed a holistic and integrated knowledge-sharing model that takes into account critical factors that enable knowledge-sharing processes, KM quality and its impact on OP. The integrated knowledge-sharing model would also place emphasis on the role played by the human factor, organisation and technology (Yusof *et al.,* 2012; Lam & Lambermont-Ford, 2010).

Generally, the South African public-sector has not, as yet, embarked on the use of the knowledge-sharing methodology. Government's national and provincial departments have yet to implement integrated and inter-operable processes and systems to manage their information in order to become learning, knowledge-based organisations (Fleig-Palmer & Schoorman, 2011) where knowledge-sharing is more conveniently facilitated.

The public-sector organisations and government departments in South Africa are still largely practising the traditional mode of communication, using notice boards, bulletins, newsletters*, 'bosberade', 'lekgotla'* and face-to-face meetings, which they claim is the practice of knowledge-sharing (Mphahlele, 2010). It can therefore be concluded that South African government organisations have not been practising knowledge-sharing and KM is still an indistinct and novel idea among senior public-sector personnel (Gaffoor & Cloete, 2010).

Given the above, it is evident that there can be no knowledge-sharing in the GDH without KM. Knowledge-sharing depends on the availability and accessibility of organisational knowledge (Krylova *et al.,* 2016). Krylova *et al.* (2016) have clearly demonstrated that knowledge-sharing can transform organisations into more competitive and productive concerns. The culture of knowledge-sharing within the organisation should be nurtured and must (and ought) to provide insights into all the aspects of knowledge-sharing (Yusof *et al.,* 2012) management, as well as quality and workers' performance and service delivery, all of which encompasses the individual, organisation and its technology.

#### 2.4.2.5. Knowledge retention/storage

Knowledge is an important success factor in organisations; it influences OP, service delivery and learning to uphold organisational competitiveness (Rahman, Ng, Sambasivan & Wong, 2013). Nonaka and Takeuchi (1996) claim that explicit knowledge can be transferred through KM, paper-based or electronic media and that it resides outside the human mind. However, tacit knowledge resides in people's heads and can only be transferred by the individual knowledge carrier, so it is difficult to articulate explicitly (Bessick & Naicker, 2013). Tacit knowledge is less familiar; it is an unusual form of knowledge, of which we are not thoroughly aware. Tacit knowledge is therefore more important and more valuable, because it offers people's thoughts and experiences.

It is this knowledge which, if not retained within the organisation, could pose challenges for organisations that wish to retain their competitive advantage. Therefore, lost knowledge can occur at an organisational or functional level, small group or

individual level as people have joined and left organisations from their inception. When a key employee leaves the organisation, expert knowledge leaves as well. Accordingly, this challenge becomes even thornier for organisations facing a surge in retirements. Many companies around the world are rapidly approaching a crisis in their workforce, triggered by the convergence of two demographic trends: the growing number of aging workers in the population and the shrinking pool of skilled younger workers who can replace them (Chigada & Ngulube, 2015).

Knowledge retention consists of three activities – knowledge acquisition, storage and retrieval (Bairi, Manohar & Kundu, 2011). Knowledge acquisition or knowledge creation describes the practices, processes and tools used to move knowledge into a state where it is kept available for future use. This can mean one expert teaching another person or group how to perform a complex task, capturing detailed problem-solving instructions in a database or embedding important company practices in an employee orientation program. Whereas, knowledge storage represents the processes and facilities used to keep knowledge until it is needed. Storage entities include individuals, groups, culture, work processes, tools and systems, such as a database. Knowledge retrieval includes behaviours and processes used to access and reuse the knowledge in new situations, such as searching an expert database, calling a colleague, remembering a past experience, brainstorming with a group about past experiences or searching a document database.

A similar viewpoint is given by Sjoerdsma & van Weele (2015) who refer to knowledge retention as knowledge storage and retrieval, whereby individual and organisational knowledge repositories are identified, organised, structured and maintained.

More recently, authors such as Handzic *et al.* (2016), Chigada and Ngulube (2015), Dewah and Mutula (2016) also confirm that knowledge retention includes: knowledge creation/acquisition, knowledge storage and knowledge retrieval, which are used to protect and preserve knowledge and allow it to remain in the organisation once it has been introduced. These three activities are considered together and are termed, organisational memory. Furthermore, Dewah & Mutula (2016) noted that knowledge retention augments organisational memory and helps to prevent its loss.

Thus, it can be seen that the concept of knowledge retention may also be described within the context of organisational learning, where the organisation retains knowledge offered by employees before they retire. Knowledge retention safeguards against this could be accomplished by a number of methods — training, written instructions, technological tools and human development tools. More recently, Dewah and Mutula (2016) continued the argument that appropriate strategies and approaches must be developed to capture the employees' expertise and retain it as organisational knowledge.

The researcher thus, loss of organisational knowledge assets is a problem that requires immediate solutions; hence, the widely-acknowledged knowledge retention strategies which include:

- Communities of practice: Voluntary groups of people held together by a common sense of purpose, sharing a set of problems, concerns and a passion for a particular topic. Experts deepen their knowledge and expertise in a particular area of concern by interacting on an ongoing basis with a real need to know what each other knows (Mele & Ongaro, 2014).

- Mentoring and apprenticeship programmes: Designed for transferring knowledge from experienced employees to the inexperienced employee.

- Subject matter experts: Experienced individuals who demonstrate a mastery of a particular topic or job and play a crucial role in KM in the organisation because they can provide solutions. Lee-Kelley & Turner (2017) defines a subject-matter expert or domain expert as a person who is an authority in a particular area or topic.

- Leveraging retirees: Used by organisations as consultants who provide critical skills and experience for special projects or assignments to mentor junior and less experienced employees, thus allowing them to share knowledge and experiences

- Storytelling: This strategy envisages people-to-people interactions, COP and teaching of lessons learnt; storytelling provides the required interaction set-up (Chigada & Ngulube, 2015). Storytellers in an organisation maintain cohesion and provide guidelines for people to follow.

- Knowledge artefacts: (Davies & Mannion, 2013) defines an artefact as a man-made object of cultural or historical interest and these include documents, files, papers, conversations, pictures, thoughts, software, databases, email messages, data sets, winks and nods and whatever else can be used to represent meaning and understanding.

As a result and based on the above understanding, knowledge retention is an activity or activities directed at retaining and making available the valuable knowledge necessary for sustaining operations efficiently and effectively. It is the capture of critical knowledge and expertise that is at risk of loss when employees leave an organisation. It aims at retaining as much of the departing employees' expertise and knowledge as possible. Finally, it is a managerial practice to ensure that knowledge is captured and retained before employees leave the organisation.

Knowledge enables employees to perform and make decisions. In this way, they thus contribute to the improvement in OP and service delivery. Bessick and Naicker (2013) observed that organisations are now addressing the issue of knowledge retention due to their growing awareness of the importance of knowledge to the organisational success. As a key factor of production in both profit and NPOs (Muzondo & Ondari-Okemwa, 2015), knowledge is increasingly recognised as an important, strategic resource by all types of organisations and institutions, whether private or public, service- or production-orientated.

The transfer and sharing of knowledge for the purposes of retaining it, in any organisation, has its own challenges. Such challenges include mistrust, politics, the reluctance to share knowledge for fear of losing individual power, hoarding knowledge and the absence of knowledge retention policies (Muzondo & Ondari-Okemwa, 2015).

The latter leads to the loss of critical knowledge in the organisation (Dewah & Mutula, 2016).

The retention of staff competencies, knowledge and organisational documents requires the systematic management of organisational knowledge in order to avoid the collective loss of corporate knowledge (McGurk & Baron, 2012). Thus, there is a transition to a knowledge-based society and economy, where knowledge is the only resource that matters. Additionally, there has been an increasing focus on knowledge as the most important resource and a valuable asset critical for organisations (Daghfous, Belkhodja, C. Angell & Angell, 2013).

Dewah and Mutula (2016) have argued that knowledge is the only factor of production that matters as we move into the era of the knowledge economy. Knowledge, like any other organisational resource, has to be accordingly managed. Thus, knowledge retention is one component of KM that needs to be implemented if this objective is to be achieved.

As a part of KM, management in organisations could implement knowledge retention strategies to promote the retention of crucial knowledge through appropriate practices (Dewah & Mutula, 2016). This would identify the knowledge resources that are at risk and must be retained. Specific initiatives could be implemented so as to store and keep these resources in the organisation (Bessick & Naicker, 2013). Successful knowledge retention is therefore dependent on what is stored in a repository and, hence, is possible to share.

Pandey (2014: 155) stated that “empirical studies have shown that while organisations create knowledge and learn, they also forget or do not remember or lose track of the required knowledge. Thus, the storage, organisation and retrieval of organisational knowledge, also referred to as organisational memory, constitute an important aspect of effective organisational knowledge retention.” Pandey (2014: 155) went further, stating that “creating new knowledge is not enough and mechanisms are needed to store acquired knowledge and retrieve it when needed.”

Like most other KM-related processes, success also depends on successful knowledge-sharing of the stored knowledge and having a knowledge-sharing OC (Said, 2015). Organisations need an integrated set of human resource capabilities to address the knowledge retention issues, for example, job rotation and job swaps can contribute to knowledge retention. There are, of course, many variations of processes, policies and practices but they are the foundation of every effective knowledge retention strategy.

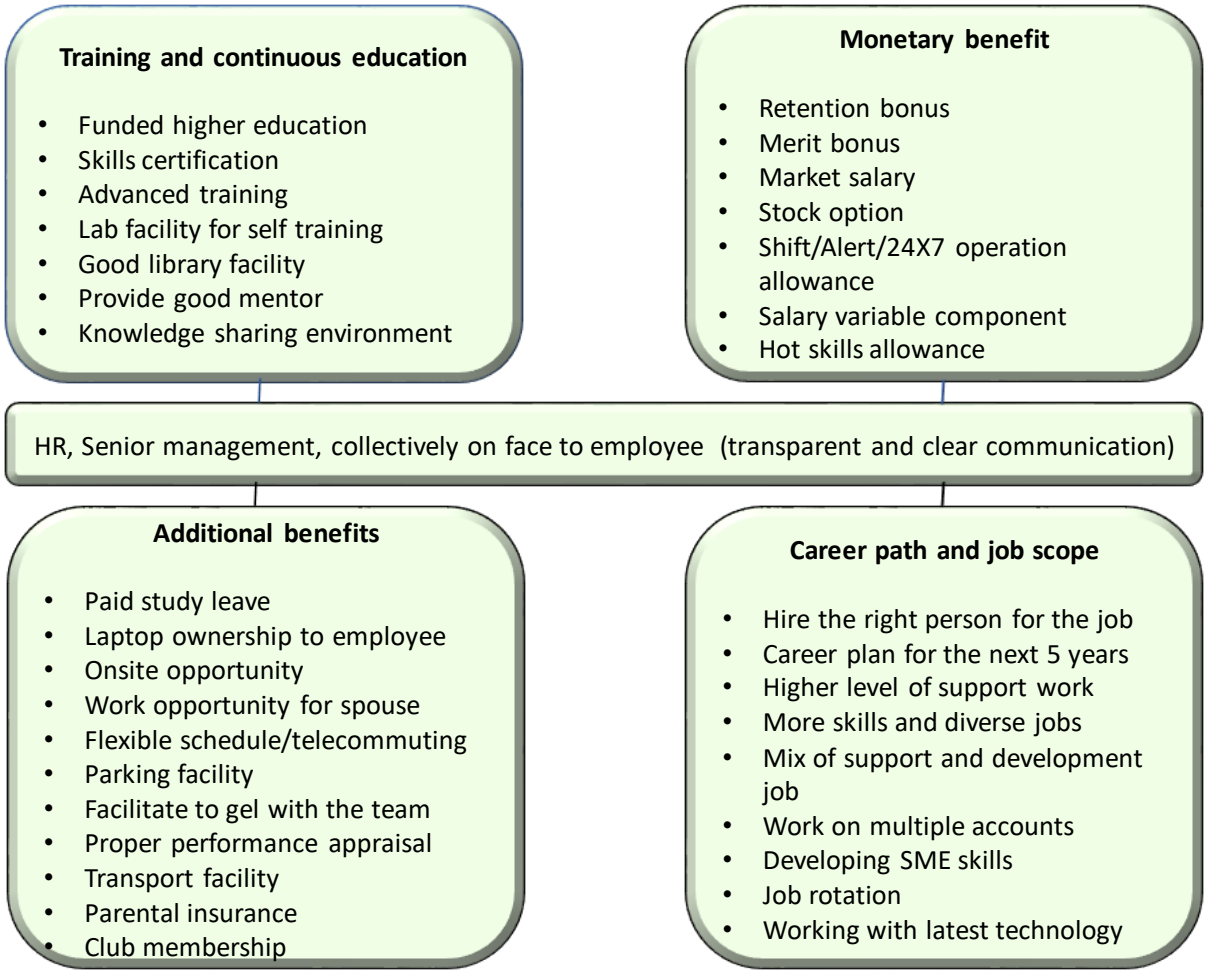



Figure 12: Knowledge-Retention Model - Adapted from (Bairi et al., 2011).

Figure 12 shows a knowledge-retention model for organisations. Four main categories of best practices are represented here, namely, career path and job scope, training and continuous education, monetary benefit and, lastly, the additional benefits:

- Career path and job scope: A key requirement for the career path and job scope is the support of top management. Recruiting has indirect impact on activities normally associated with knowledge retention. The best practice in retention is to adopt a holistic recruitment approach for retention by researching and then seeking workers who are more likely to stay in the organisation.

- Career development plan: The career development process provides a roadmap for building capabilities that need to be transferred to the next generation.

- Training and continuous education: The prime objective is to enhance the skill level of employees. This can be accomplished by best practices for career development, transparency, employee recognition, building, relationship and establishing work environment. These approaches are required to reconcile the conflicting values related to organisational knowledge alternatives that are obtained by integrating competing needs into an approach that serves both goals

- Additional benefits: Direct as well as indirect additional benefits are aimed at employee retention and indirect measures are aimed at brand-building and attracting talent from industry. Compensation and reward systems are designed to support knowledge-sharing behaviours

- Monetary benefits: Compensation and reward systems must be designed to support knowledge-sharing behaviours

Highlighted in the centre are the employees seeking transparency and clear communication from their supervisor, human resources (HR) and senior management.

Based on literature, the retention model proposes that organisations implement successful retention programs as part of the knowledge-management strategies by:

- Developing and implementing the proposed best practices and their related factors and continually reviewing them to complete their strategic KM needs.
- Incorporating internal surveys to get the real feedback on policies, practices and regular communicating with employees; and
- Using various customer feedback methods and industry practices to reinforce the future iterations of this value-creating cycle.

Dewah and Mutula (2016) presented tools and techniques (included in the knowledge-retention model) which can be used specifically for knowledge retention and included:

- Reward and recognition programs;
- Employee recognition plan;
- Career development;
- Community of practice;
- Mentoring programs;
- Job shadowing;
- Job rotation;
- Coaching; and
- Company procedures/processes manuals.

The GDH, like all public-sector organisations, generates critical organisational knowledge and also offers knowledge-driven work processes and practices to enhance productivity (Ling, 2011; Fleig-Palmer & Schoorman, 2011). Knowledge-management strategies, including knowledge retention, could contribute towards the improvement of OP, thereby enhancing the quality of HSD in the interests of the Gauteng public.

Therefore, it is the researcher's view that it is vital for the GDH to effectively manage tacit knowledge generated in the department, because knowledge retention contributes towards corporate governance and safeguards the business interests of the GDH (Cegarra-Navarro & Sánchez-Polo, 2011). Knowledge retention, as identified in the literature, is important in protecting organisational knowledge. It presents a vehicle for reducing the costs associated with knowledge loss. In addition, knowledge

retention could be classified as an action that makes knowledge available to contribute to OP and HSD by the GDH and allow its operations to be sustainable through efficiency and effectiveness.

#### 2.4.2.6. Knowledge application/use

In earlier sections of the literature review, the researcher deliberated on KM as a critical subject of discussion in business literature. Both business and academic communities believe that, by leveraging knowledge, organisations can sustain their long-term competitive advantages. Many researchers regard knowledge as a principal source of organisational effectiveness and competitiveness (Grant, 2015). To maintain their competitive advantage and successfully transform, organisations must create knowledge faster and rapidly translate it or apply it into new products and services (Grant, 2015).

As pointed out above, there is a growing recognition of the importance of knowledge and its role in OP, service delivery and knowledge competitive advantage (Grant, 2015). However, few studies have systematically investigated the antecedents of knowledge application (Grant, 2015). Matin and Sabagh (2015) argues that there is still no consensus about how knowledge should be used. Various different perspectives on the use of knowledge have been adopted, ranging from technological solutions to the communities of practice and the use of best practices. Other researchers and organisations believe that IT is a powerful tool that could provide an edge in harvesting knowledge (Haque & Anwar, 2012). Others such as Coleman (2014) argue that, as knowledge resides in both coded form and in human minds, employees' socialisation, training and motivation are the key factors in knowledge application and that knowledge cannot exist independently of humans.

Nonetheless, to achieve improved OP and HSD and sustainable competitive advantages, the GDH has to continuously generate, disseminate and apply new knowledge to improve OP and service delivery, in line with their transformation. Therefore, effective knowledge application was identified as a crucial aspect of KM for the GDH to sustain their long-term competitive advantages.

To this end, Coleman (2014) argued that both IT (structured knowledge) and social systems (human knowledge and social knowledge) are equally important in knowledge application. Dewah & Mutula (2016) posited that, in as much as IT can easily and efficiently convert data and information, it would be a poor substitute for converting information into knowledge. On the other hand, conversion between information and knowledge is best accomplished with social actors and social processes.

In general, organisational knowledge has to be absorbed into an organisation's service delivery strategies and processes. If an organisation finds difficulty in locating the right kind of knowledge in the correct form, it may find it hard to sustain its competitive advantage.

In support of this, Coleman (2014) further argued that an important aspect of KM is enhancing the organisational knowledge application process so that an organisation can apply to their daily activities both the knowledge they own and the knowledge they could access. This process could lead to organisational value when it is used to produce an effective performance and could provide a huge differentiation to their competitive advantage.

Recently, Duffield and Whitty (2016) and Toledo, Chiotti and Galli (2016) noted that organisations that excel at knowledge application are inherently better at continuously translating their intellectual capital into high-quality services. Clearly, the organisational intellectual capital is of value only to the extent that it can actually be applied in organisational operations. As a result, the researchers believe that the synthesis of individuals' tacit knowledge, specialised knowledge, know-how and experience with situation-specific systemic knowledge is a key facet of knowledge application. The value of individual and organisational knowledge therefore resides primarily in its application.

Duffield and Whitty (2016) further argue that effective knowledge application would enable and position an organisation to identify, interpret and respond to new business opportunities and threats through a well-managed knowledge-integrated process.

Further, Toledo *et al.* (2016) noticed that when knowledge application is effectively integrated, social collectives such as teams and organisations begin to function as a robust and well-coordinated system where individual members of the organisation then assume the role of multiple potential receptors, each helping peers to sense stimuli within the given domain of specialisation.

Recent research debates the benefits of effective organisational knowledge application and knowledge integration, suggesting that it appears that how an organisation uses its knowledge determines whether that knowledge is useful (Coleman, 2014) and will help it to maintain its competitive advantage (Grant, 2015). Thus, empirical studies of the link between knowledge application of the intellectual capital and knowledge integration and the increase in OP and the likelihood that organisations will reliably sense emerging threats and opportunities thereby maintaining its competitive edge, have been conducted within the context of OP and HSD.

## 2.5. Organisational performance

An organisation's resources drive its performance in a dynamic and competitive environment. In as much as there are different criteria to measure performance, depending on different situations, similar perspectives exist regarding the definition of OP.

The OP cited in this study was delineated in the concepts section's definition is firmly based on the research topic. OP is a broad concept which captures what an organisation does and accomplishes for the various constituencies with which it interacts (Moghaddam *et al.,* 2015). Therefore, in this study, OP of the GDH is the quality of healthcare services delivery to patients. It is the delivery of healthcare services at the PHC and related healthcare entities as measured against its intended goals and objectives. To this end, measuring the performance, with various measures of OP, of such organisations is a challenging task.

The researcher observed that there is little consensus about how OP is defined. Despite the various definitions and interpretations, researchers seem to agree that OP is a complex and multidimensional phenomenon (Adams *et al.,* 2014).

Modern OP evaluations are often used to measure organisational financial performance, such as ROE, ROI, EBIDTA and PBT. The use of traditional financial measurements could give misleading indicators for overall OP, as they are incapable of distinguishing the differences in financial measures related to parameters, such as costs, product quality and profit levels and non-financial measures like customer satisfaction and employee satisfaction.

Adams *et al.* (2014) argues that short-term financial performance measures based on traditional accounting practices, with an emphasis on short-term indicators, are not ideally suitable for measuring OP but due to the fact that non-financial measures, such as employee and customer satisfaction, have become increasingly important. Al-Bahussin and El-garaihy (2013) indicates that OP measures that do not incorporate the identification of the inter-relationships among situations, contexts and intangible values like knowledge, competencies and partnerships, are unlikely to give a fair view of OP. Therefore, in order to consider both financial and non-financial measures, the researcher proposed the use of non-financial performance indexes to evaluate OP – a similar view advanced by Adams *et al.* (2014).

Haigh (2015) in his recent study, found that there is a tight relationship between organisational KM and OP. Subsequently, recent research by Rapiah, Wee, Kamal, & Rozainun. (2009) and Naranjo-Valencia, Jiménez-Jiménez & Sanz-Valle (2016) further enhanced the idea that KM capability could be a critical mediator between external knowledge and OP. Thus, it can be seen that when an organisation is equipped with an excellent KM capability, it is possible to acquire, transform and apply internal knowledge effectively to enhance OP.

The definition of OP adopted for this study is therefore more biased towards non-financial measures that show that an organisation’s knowledge-management capability is an important factor influencing OP. In other words, the prerequisite for acquiring a high-performance organisational status and a competitive edge in the

market is whether the organisation is able to accumulate past experiences and to transform knowledge owned by the employees into organisational knowledge, as well as being able to transform and adapt to the environment through KM. Furthermore, Corfield and Paton (2016) posited that if an organisation can create new knowledge from existing knowledge by learning, its performance can be enhanced.

The GDH is not necessarily expected to generate profit. Rather, it has to serve the people using government resources. Mills and Smith (2011) argue that, in such a situation, achieving improved OP to deliver quality healthcare services cannot be measured only by the traditional financial measurements but mainly on non-financial measures, including the management of organisational knowledge (Emadzade, Mashayekhi & Abdar, 2012).

Milost (2013) and Uyar (2010) have identified by empirical evidence that the non-financial measures, which include the organisation's KM capabilities (infrastructure capabilities and the knowledge process capabilities), has been linked to various measures of OP. This relationship is depicted in the conceptual knowledge-based OP and service-delivery model (Figure 1) in the definition of concepts (page xix).

### 2.5.1. Knowledge Management Capabilities

Synthesis of the prior discussion suggests that organisational capability to effectively initiate and maintain KM can be framed along broad dimensions of infrastructure and process. The two dimensions of KM capability that have been proposed, are noteworthy. On the one hand, KM capability is categorised from the infrastructure view and subdivided into three sub-constructs of capabilities. On the other hand, Tseng and Lee (2014) posited that KM capability is categorised from the process viewpoint and subdivided into four sub-constructs of capabilities.

These dimensions reflect an additive capability to launch and sustain a KM programme within an organisation, Tseng and Lee (2014). In other words, these constructs are not higher-level abstractions of their underlying dimensions. Instead, they are a combination or additive sum of their respective segments. This is consistent with the notion of a "capability" in the organisational behaviour literature (Moustaghfir *et al.,*

2016). Thus, the specification of KM capability constructs, knowledge infrastructure capability and knowledge process capability and their respective sub-constructs, enables managers to formulate an appropriate strategy to manage knowledge. The nature of KM can be better understood through the insights into the trends of KM capability constructs.

Nevertheless, the evidence from the previous studies by Liu, Song and Cai (2014), Matin and Sabagh (2015), Akdere (2009) has shown that OP can be enhanced by KM capability but the findings on the relationship between these two factors (knowledge infrastructure capability and knowledge process capability) in previous studies are contradictory (Liu *et al.,* 2014). Some researchers contend that KM capability affects effectiveness significantly and directly. Aujirapongpan, Vadhanasindhu, Chandrachai & Cooparat (2010) found that knowledge infrastructure and knowledge process capabilities have significant effects on organisational effectiveness. Tseng & Lee, (2014) also empirically found that KM capability enhances OP.

However, other researchers point out that KM capability affects OP indirectly. Liu *et al.* (2014) found that innovation mediates the relationship between KM capability and effectiveness. Roldán, Real & Sánchez-Ceballos (2014) proposed that KM capability affects organisational effectiveness indirectly and through organisational learning process and dynamic capability.

The researcher believes that further examination of this issue is necessary because the process through which KM capability changes performance can be better understood and the relative importance of each KM capability can also be investigated specifically.

Be that as it may, the proposed model of KM capabilities (Ekionea *et al.,* 2011; Krylova *et al.,* 2016) is a multidimensional combination of knowledge infrastructure capabilities (technology, OC and OS) and knowledge process capabilities (knowledge acquisition, conversion, application and protection). Literature suggests that KM capability is necessary for effective KM (Davenport & Prusak, 2000) and has found that KM capabilities are positively related to OP.

### 2.5.2. Knowledge Infrastructure Capabilities

As indicated above, knowledge infrastructure is comprised of information technology, OC and OS. The technological element, which is largely IT, is an enabler and provides the organisation with a platform for the integration of information and knowledge, as well as creation, sharing, application and storage of the organisational knowledge resources.

On the other hand, OC, which is a collection of values, beliefs, behaviours and symbols (Corfield & Paton, 2016) which, when combined, creates a knowledge-friendly culture. This is an important contributory factor to effective KM (Al-Bahussin & El-garaihy, 2013).

Finally, OS is largely reporting relationships in the organisational hierarchy and the rules and regulations for the co-ordination and management for the organisational resources (Ajagbe, Maduenyi, Oke & Olatunji, 2015). Ekionea *et al.* (2011) argues that changes in the OS are occasionally necessary to allow for effective knowledge creation and knowledge transfer, which have been positively associated with improved OP and service delivery.

### 2.5.3. Knowledge process capability

Knowledge process capability is comprised of knowledge creation, knowledge-sharing, knowledge application and knowledge protection. Ekionea *et al.* (2011) contend that these elements of knowledge process capabilities are all required for leveraging the infrastructure capabilities. Knowledge creation is the organisation's capacity and capability to identify and acquire both external and internal knowledge to support its business operations.

Matin and Sabagh (2015) and Tseng & Wu (2012) have shown in their research that knowledge creation creates organisational advantage and its practices were significantly related and linked to OP. The speedy conversion of data into information and information into usable knowledge to maximise the benefits in favour of the organisation would allow knowledge conversion to influence OP.

Knowledge application refers to an organisation's timely response to changes in the environment and technology by using the newly-created knowledge for improving its services and organisational processes. This point is further supported by Choi, Lee and Yoo (2010) who maintains that knowledge application is the organisation's ability to effectively and efficiently apply knowledge at a faster pace to create value and increase the organisation's competitive advantage.

Knowledge application is therefore a significant element in the improvement of OP and delivery of quality services, which, in turn, has a direct impact on OP.

In conclusion, there is a general consensus of opinion, as captured by Mills and Smith (2011) and Emadzade *et al.* (2012), that KM is directly associated and linked to OP and related KM elements, namely knowledge infrastructure capability and knowledge process capability which have a significant and positive impact on organisational effectiveness for improved service delivery. Furthermore, the results of the study conducted by Zack, McKeen and Singh (2009) indicate that KM practices are positively associated with OP.

### 2.6. Healthcare service delivery

Due to human complexity, arising from environmental factors, healthcare services have increasingly become essential to individuals and organisations alike in their daily life activities. As healthcare services increase in significance, the technology, expertise and knowledge acquired and used in carrying out its services also becomes vital as well as complex. Based on the challenges in terms of poor HSD that the people are experiencing all over the world, it is critical to understand the enabling scenery of KM.

The ultimate goal of PHC is better health for all. The key elements of aiming to achieve quality HSD are reducing exclusion and social disparities in health and organising healthcare services in accordance with people's needs and expectations (service delivery). This also involves the integration of healthcare into all the sectors of the public (public-sector reforms), pursuing collaborative models of policy dialogue (leadership reforms) and increasing stakeholder participation (KM) (Bordoloi & Islam, 2011).

Wendt, Frisina and Rothgang (2009) highlight the existing concerns with the current levels of healthcare services, in that they do not respond to what people are expecting and demanding. In public-sector healthcare, people face unmotivated and poorly-trained staff, long patient queues, inconvenient clinic hours, inadequate supplies of drugs and lack of any confidentiality or privacy.

Whittaker *et al.* (2011) further identifies the fundamental issues that were impacting negatively on HSD. These were the fact that scarce resources are used inefficiently, public funds are being spent on inappropriate and cost-ineffective healthcare services and money does not reach the correct places of need.

In the last quarter century, many countries have focused their attention on the improvement of public services delivery (Wendt *et al.,* 2009). The reasons for the need to improve service delivery vary from public-sector reform to political and economic transformation. Even when it is not explicit, improving service delivery is an implicit motivation behind most of these transformation and public-sector reform initiatives. Whittaker *et al.* (2011) points out that, without public-sector reform or organisational or structural transformation, it is highly probable that existing OSs and healthcare management systems will continue to fail to deal adequately with the problem of HSD.

Schaay *et al.* (2011) identified that basic services, such as health, education, water and sanitation, all of which are the responsibility of the state, are systematically failing the poor. Governments and their various public-sector institutions are falling short of their responsibilities to ensure adequate HSD to their citizenry. Public healthcare spending has no significant cause-and-effect articulation with improvement in HSD (Whittaker *et al.,* 2011). In addition, the health-sector reforms are driven by wider macro-economic policies, public-sector reform and the implementation of structural adjustment programs (Wendt *et al.,* 2009).

### 2.6.1. Understanding healthcare systems

Effective HSD is the direct result of a well-functioning Healthcare System (HS). Schaay *et al.* (2011) argues that, to adequately implement any organisational transformation, there should be structural adjustment programs or public-sector reform of the HS with

the objective of improving HSD. It is important to understand the context in which HSs operate and to increase our understanding of the HSs themselves.

Kothari, Hovanec, Hastie & Sibbald (2011) pointed out that there is no adequate conceptual definition of HSs. However, they provided an understanding of the HS by combining what Schaay *et al.* (2011) referred to as resources - the three major dimensions of HSs: finance, health-service provision and regulation. This resulted in what they referred to as the ideal-types that can be identified on the basis of uniform features across all the dimensions of healthcare.

These ideal-types are the state HSs, in which financing, service provision and regulations are carried out by state and its institutions; societal HSs, in which societal actors assume responsibility for healthcare financing and provision; and finally, private HSs, in which all three dimensions of financing, health-service provisioning and regulation fall under the auspices of market actors (Wendt *et al.,* 2009).

### 2.6.2. Managing knowledge for healthcare service delivery

In the last two decades, KM has received increasing attention in the field of healthcare (Bordoloi & Islam, 2012). This could be attributed to the sensitive nature and the increasing needs of healthcare services. Healthcare operations depend on and are influenced by a number of factors. One of these factors is the effective management of the amount of knowledge within the HS. The KM studies carried out in the healthcare environment have demonstrated the benefits in one way or the other as well at the implications and effects on HSD (Chen, 2013).

One of the challenges to HSD is the lack of distinction between the normal routine patient management problem that occurs most frequently at the front-line healthcare service centres and the once-off strategic dilemmas that occur in district hospitals (Kaisara & Pather, 2011). However, Kaisara and Pather (2011) argue that the extent of KM strategy differs, depending on the healthcare service required. Clinical healthcare requires not only creative ways of exchanging tacit knowledge but also innovative ways of using KM to turn ideas into the provision of an excellent quality healthcare service (Kothari *et al.,* 2011).

Within countries, citizens and organisations need to interact with national public administrations. South Africa is currently implementing service delivery initiatives spearheaded by the 'Batho Pele' Principles (Kaisara & Pather, 2011). The 'Batho Pele' principles were developed to serve as a policy and legislative framework for service delivery in the public service, aligned with the constitutional ideals of:

- Promoting and maintaining high standards of professional ethics;
- Providing service impartially, fairly, equitably and without bias;
- Utilising the resources efficiently and effectively;
- Responding to people's needs; the citizens are encouraged to participate in policy-making; and
- Rendering an accountable, transparent and development-orientated public administration.

The objective of the Batho Pele policy framework was to introduce a new approach to public HSD. This approach was equally enforced by the public-sector reforms to change attitudes and behaviour in the public service and to introduce a customer-centric culture and mind-set, an approach which would put people first and improve the delivery of healthcare service (Kaisara & Pather, 2011).

This is evidently in line with transforming the public-sector for organisational survival and the maintenance of competitive strength in the context of the new global economy and knowledge-era. The public is spoiled for choice in the healthcare services and has grown accustomed to customer-centric service delivery from the private-sector healthcare services, so they expect the same level of quality healthcare service from the state HS.

Consequently, endeavours to manage knowledge for transformation to improve the quality of healthcare services form an intrinsic component of the planning and delivery of the quality public healthcare services (Myllärniemi, Laihonen, Karppinen & Seppänen, 2012). Nevertheless, Evans *et al.* (2015) argue that quality service delivery is the result of the efficient and effective management of knowledge to achieve improved OP and quality healthcare service. Thus, OP and improved HSD is primarily

a result of effective actions by knowledge workforce and therefore good KM is crucially important.

Acheampong (2014) further argues that people act effectively when they understand the situations and contexts in which they are operating, are motivated and have appropriate resources. Bharadwaj, Chauhan and Raman *et al.* (2015) put forward the concept that when people are treated “right”, productivity also improves.

The researcher notes that the global economy is impacting all organisations, the public-sector included. Organisations across the world provide competitive products and services to their customers. They have access to the same markets and the same customers and it is only through the management of organisational knowledge that they succeed in the competitive global market (Myllärniemi *et al.,* 2012).

Iyamu and Mkhomazi (2016) highlighted four types of knowledge in the healthcare: practitioner knowledge, resources knowledge, process knowledge and organisational knowledge. As they complement one another, this knowledge is required in the different areas of specialisation of healthcare services. The need for these types of knowledge is influenced, driven and determined by how they are acquired, shared, retained and used. The four types of knowledge are explained as:

- Practitioner Knowledge: Knowledge in areas of specialisation which is specifically required by the specialist healthcare professionals to execute their activities and delivers service in the organisation.

- Resource Knowledge: This type of knowledge concerns operational facilities, making it possible for decision making and is required by practitioners in order for them to execute their activities and service delivery.

- Process Knowledge: The knowledge of actions which is undertaken by employees to produce change in their operations. This is the type of knowledge acquired and shared by healthcare professionals and determines

to a large extent if the inputs lead to the desired output at the interface with the population.

- Organisational Knowledge: Knowledge which aids workers to better understand their organisation and the HS, in general. This involves a knowledge flow which is pragmatically used to enhance the OP.

The management of the above-mentioned knowledge within the healthcare environment is therefore a fundamental element to ensure quality of HSD.

Kim, Lee, Chun and Benbasat (2014) demonstrated that in order to gain better understanding of how knowledge could effectively be managed to improve HSD, the influencing factors must be established and understood. The management approach is intended to accelerate knowledge culture and knowledge flows in the organisation.

The knowledge workers are the knowledge facilitators in the HS. This implies that they create and transfer certain knowledge through formal and informal processes within the organisation. Based on the acquired knowledge, an understanding amongst the knowledge workers is created. The understanding helps the knowledge workers to carry out their tasks and provide healthcare services to communities. The organisational processes tend to improve as knowledge is shared and leveraged among the actors in the HS. An efficient KM approach is a valuable way for helping workers within the organisation to exploit all the available knowledge sources

## 2.7. Public-sector reform and good governance

During the past two decades, a variety of public-sector reforms and initiatives, such as the healthcare reform initiatives based on the universal coverage and the “10 Point Plan” of the DoH (for example NHIS and SAHPRA) (DoH, 2014; DoH, 2015) have been undertaken in order to achieve efficiency, effectiveness, and quality in service delivery in the South African public HS. The South African government is determined to improve the quality of public service delivery and to be responsive to citizens’ needs. To this end, its public-sector reform initiatives placed a considerable focus on the importance of managing knowledge in public-sector organisations, as well as solving

the challenges for governments to make use of and adapt from this (Mele & Ongaro, 2014; Grindle, 2013). Thus, to be able to learn from the past transformation, organisations are expected to value knowledge and information

As a result and with this transformation, governments are undertaking significant public-sector reforms and face huge challenges. This suggests that running government like an enterprise has been an imperative. In their haste to implement the public-sector reform initiatives, policy-makers should not forget that government belongs to its citizens (Mele & Ongaro, 2014; Grindle, 2013). Bearing in mind that protecting the core public administration values of justice, transparency, openness, accessibility and non-discrimination is as important as satisfying the new public management demands of a knowledge-based organisational management, results-orientation, cost efficiency, accountability, productivity and quality in service delivery.

### 2.7.1. Public-sector knowledge-based organisation

It is widely acknowledged that, if public-sector organisations want to survive and prosper under the current competitive environment, they have to rapidly change their way of thinking and acting from that of a rigid, congested bureaucracy to that of a modern and flexible business organisation (Mele & Ongaro, 2014; Grindle, 2013).

Equally critical is the realisation that if it is to be relevant to the present economic context, the public-sector organisation needs to be transformed into a knowledge-based organisation. (Gaffoor & Cloete, 2010). KM in a knowledge-based public-sector organisation has significant benefits and has a positive impact on various divisions of the organisation. As a result, the processes and departments of a knowledge-based organisation have to collaborate and functional silos have to be eliminated.

Gaffoor and Cloete (2010) further argue that as they are crucial for the achievement of organisational effectiveness, KM enablers in a knowledge-based organisation need to be developed. This therefore, includes aligned OCs, HR, IT, OS and, organisational strategy and leadership.

South African national and provincial departments' performance strength is now increasingly being measured in terms of knowledge and its usefulness and the speed with which it can be applied (Grindle, 2013). In this knowledge-based environment, the attainment of operational efficiency and maintenance of the competitive edge increasingly depends on the management of ideas and innovation (Moballeghi & Moghaddam, 2011). As governments embrace the 'Knowledge Age', the value of, and demand for government service delivery will significantly increase. The growing perception of the value of knowledge within society, in particular in relation to the government service delivery, has been one of the sources of the emergence of a 'Knowledge Economy' (Mele & Ongaro, 2014; Grindle, 2013). They therefore, maintain that the ability of government departments to understand, manage and maximise the benefits of this 'Knowledge Economy' in which knowledge is the key OP and service delivery driver, is seen as vital for successful public-sector reform.

In a knowledge-based organisation, innovation and creativity are the principal determinants of competitiveness and, in turn, give rise to a focus on the organisational intellectual capital (Iskhar & Mahdaoui, 2014) This intellectual capital needs to be 'managed' and measured in order for government departments to be able to fully account for their value, OP and service delivery (Handzic *et al.,* 2016; Evans *et al.,* 2015; Moghaddam *et al.,* 2015; Guthrie & Dumay, 2015; Nazari, 2014).

### 2.7.2. New public-sector management

Public-sector organisations have initiated the new public-sector management model, based on government public-sector reform to increase performance, productivity and service quality, in accord with specific initiatives in the public-sector reform framework (Christensen & Lægreid, 2013). Using this framework, public-sector officials have concentrated on meeting departmental objectives and achieving measurable results and high-quality outcomes.

They have sought to redefine their organisational mission and strategy and to enhance business processes and procedures as well as to strengthen commitment to accountability and transparency. The new public-sector management is described by

Christensen & Lægreid (2013) as a normative reconceptualisation of public administration consisting of several inter-related components:

- Providing high-quality services that citizens value;
- Increasing the autonomy of public managers, particularly from central agency controls;
- Measuring and rewarding organisations and individuals on the basis of whether they meet demanding performance targets;
- Making available the human and technological resources that managers need to perform well; and
- Appreciative of the virtues of competition, maintaining an open-minded attitude about which public purposes should be performed by the private sector, rather than the public-sector.

In 2004, the South African government introduced radical changes to the administration of the public healthcare services and recently in the complete reform of the public HS through the '10 Point Plan' strategy (DoH, 2015). The essential elements of these changes were discussed in Section 1.1 and the introduction of the whole of government service delivery (Section 2.6 and Section 2.7). The introduction of these public-sector transformation initiatives introduced a shift in the balance of public accountability towards the efficient management of organisational resources for improved HSD.

From the previous discussions in this study, knowledge is regarded as one of the key variables in the public-sector reform for organisational transformation. Kothari *et al.* (2011) maintain that the depth of knowledge residing in HR constitutes a decisive factor in organisational success and is a source of competitive advantage. Therefore, implied in the KM literature is that the knowledge-based organisation is a high-performing organisation, because of its ability to create knowledge, transfer, apply it and adapt to the environmental demands of the knowledge era.

Marthinus (2011) further contends that the management of knowledge in a transformed public-sector organisation leads to success. Successful KM requires an

enabling environment in which employees support and engage in organisational activities and the OC is positive. Key components of an enabling environment include the introduced public-sector reform initiatives (Mele & Ongaro, 2014) or the new public-sector management, which are vital to the success of development activities, sound financial management and administrative policy to ensure OP, service delivery and good governance.

Hunter (2012) maintains that KM is imperative in the public-sector so as to strengthen the effectiveness of the public service and improve society. KM, as argued by Mkhize (2015) and now recently by Dewah & Mutula (2016) in the context of new public-sector management or public-sector reform and good governance, plays a key role in accelerating the flow of information and knowledge between government, the citizens and business. Accordingly, to be effective, it must be impressed upon government entities that it is through knowledge acquisition and the desire to apply KM to the benefit of the public-sector and the GDH in particular, as well as those they serve, that good governance can be ensured, productivity improved and efficient HSD achieved.

## 2.8. Organisational transformation

> What transforms this world is — knowledge. Do you see what I mean? Nothing else can change anything in this world. Knowledge alone is capable of transforming the world, while at the same time leaving it exactly as it is. When you look at the world with knowledge, you realize that things are unchangeable and at the same time are constantly being transformed.
>
> Yukio Mishima (2010: 122)

In line with the ideals of the PFMA Act 1999, the South African public-sector has undergone a series of public-sector reforms since the advent of democracy in 1994. The public-sector reform initiatives' agenda, as discussed in Section 2.7 of this report, encompasses financial reform (i.e. PFMA and MFMA) and administrative reform (i.e. accountability and transparency) to realise sustainable benefits from the public-sector reform initiatives and promote a customer-centric service delivery and performance

culture. There is, therefore, a growing recognition that fundamental organisational changes in the government institution are required.

On that note, public-sector organisations today are increasingly faced with not only the public-sector reforms but also fierce competition, demanding customers, economic pressures and financial crises. The new business practices compel organisations to adopt and implement a variety of complex interpretations of information (Handzic & Durmic, 2015)

Ekionea *et al.* (2011) contend that the organisation's success in the new knowledge economy is its ability to achieve economic value from its intellectual capital and knowledge assets. Nazari (2014); Handzic & Durmic (2015); Evans *et al.* (2015); Moghaddam *et al.* (2015) pointed out that, despite the competitive necessity of becoming a knowledge-based organisation, senior managers have found it difficult to transform their organisations through programs for KM.

These are the same pressures that the GDH experiences as a result of public-sector reform. This reform obliges the GDH not only to improve its OP but also to provide high-quality healthcare services for the public. Public healthcare centres in Gauteng and private hospitals have access to the same markets and can only succeed through excellence by delivering high-quality healthcare products and services, or a combination of these offering customers the greatest value (Nonaka *et al.,* 2014).

The organisational leaders have the challenge of managing the internal and external environmental attributes aligning the organisational strategy with their OS (Al-Bahussin & El-garaihy, 2013). As a result, they have to link the government culture with the political reforms in the country for successful organisational transformation. Many researchers have demonstrated that OC has a direct and significant impact upon both the organisation's ability to transform and its success (Al-Bahussin & El-garaihy, 2013).

Many organisations are often inwardly focused and apply reactive short-term transformation, with focus on simply correcting immediate problems in an attempt to return OP to acceptable levels. The observation of the researcher is that such

approaches will often not consider organisational knowledge resources or organisational learning. A similar viewpoint is given by Marthinus (2011) that it is useful to think of transformation as a process of knowledge generation rather than one of resolving short-term challenges.

Acheampong (2014) argue that organisational transformation is a process of insightful and radical change that must lead the organisation in a new direction and take it to an entirely different level of effectiveness, performance and productivity. Transformation also implies an organisational change in its KM orientation (Handzic & Durmic, 2015; Moghaddam *et al.,* 2015; Evans *et al.,* 2015; Nazari, 2014).

Key to this strategic transformation process is identifying how, through the creation and sharing of new knowledge within the organisation, an OC is formed. OC as captured by Nonaka and Takeuchi (1996), is a set of shared beliefs, assumptions and knowledge which are taken for granted and rarely voiced explicitly. They can be linked to tacit knowledge (Nonaka *et al.,* 2014), knowledge that may include insight and intuition and is 'deeply rooted in an individual's actions and experience, as well as in the ideals, values or emotions he or she embraces' (Nonaka & Takeuchi, 1996).

Therefore, for organisational transformation to occur, these beliefs, assumptions and knowledge form employees' behaviour in an organisation, the routines, assumptions and knowledge and their associated meanings must change. This must be consistent with the shared tacit knowledge about the way things are done in the organisation and how organisational activities are coordinated and executed to deliver the desired results (Al-Bahussin & El-garaihy, 2013).

Hence, the ability to share knowledge and collaborate and receive support from top management requires a successful implementation and use of KM practices.

### 2.8.1. KM practices in public-sector

Pioneering researchers such as Nonaka & Takeuchi (1996), Nonaka *et al.* (2000) and Davenport and Prusak (2000) refer to the performance of an activity in order to learn

or perfect a skill or the way ideas are translated into action in the process of accomplishing job functions.

The common thread running through the public-sector organisation is lack of knowledge or the failure to use the existing knowledge sources (Nonaka *et al.,* 2014). The GDH as a service-driven and knowledge-intensive organisation will be able to transform itself successfully, according to its ability to apply its combined knowledge sources to find a unique solution to its customers' needs (Ekionea *et al.,* 2011). These knowledge sources are the external structures, organisational competencies and organisational internal structures (Ekionea *et al.,* 2011).

Thus, external structures include competitors, suppliers and customers or citizens, which would provide the organisation with an excellent tacit and explicit knowledge source about successful service delivery. Organisational competence is the available experience, skills and OC which is the knowledge that must be channelled to ensure a successful transformation. Organisational internal structures are the business processes and practices, staff and management find within different areas of the core business of the organisation.

### 2.8.2. Knowledge as a transformation tool in the public-sector

The central idea underlying transformation strategy is that organisations in the public-sector must adjust their capabilities (Adams *et al.,* 2014) to a constantly changing complex, external environment. Literature and theories concerning organisational transformation have pointed out that modern organisations are forced to create knowledge-based organisations that decrease the dependencies on the knowledge residing within the individual (Corfield & Paton, 2016) but to codify and store the individual's knowledge, making tacit knowledge explicit and transposing individual knowledge with organisational knowledge.

Therefore, such organisational transformation can be achieved by government departments and public-sector organisations in general by the drive and need to better manage knowledge by establishing core competencies and strive to become an innovative and learning organisation with a culture of knowledge-sharing/transfer and

recognising that knowledge is the only resource that provides an organisation with a sustainable competitive advantage (Nonaka *et al.,* 2014).

### 2.8.3. KM in government departments

KM in the public-sector in recent years has captured and attracted much attention from researchers and practitioners. There are some advantages, disadvantages and failures in the implementation of KM by organisations across industries (Dewah & Mutula, 2016).

As a result of the evident link between KM and electronic government (Ryan *et al.,* 2012; Sisson & Ryan, 2016) there are various suggested organisational transformation and public-sector reform initiatives. For example, in the South African HS, there is NHIS. There however, remained obvious challenges which were highlighted in KM literature, such as IT, business processes, people and cultural behaviours which posed certain challenges for some of these reform initiatives.

These include the lack of a general knowledge-management guideline or framework, barriers to inter-organisational knowledge-sharing, organisational changes and leadership assignments not based on merit or experience (Toli, 2014). Nonaka *et al.* (2014) point out that it is important to transform the organisation to establish a knowledge-based culture and analyse organisational hierarchies, encouraging ideas for a successful KM implementation.

As the organisational transformation and public-sector reform initiatives are implemented and more legislation and transformation regulations are passed by government, the government departments will experience considerable changes in every way. During such transformation processes and at each stage of these changes, challenges will affect the barriers to the implementation of KM for transformation in government departments. Nevertheless, KM, though, has distinguished itself as a one of the tools for further enhancing such transformation processes.

As the government workforce is getting older and there is a danger of losing their knowledge and skills to retirement, organisational transformation through knowledge

retention and the implementation of KM practices can play a critical role in the strategic management of human capital in government departments to retain knowledge (Iskhar & Mahdaoui, 2014). Literature has demonstrated that KM can be a key pillar of the human and intellectual capital strategy and a critical tool for transformation (Iskhar & Mahdaoui, 2014).

### 2.8.4. Studies related to KM in government departments

There are many studies relating to KM practices for organisational transformation in the public-sector in general and government departments in particular. KM has taken the public-sector by storm and has proven to work in most competitive government environments. (Christensen & Lægreid, 2013).

Case studies have been conducted and books written on KM in the public-sector. Many studies were found to demonstrate complex interactions among KM enablers and processes influencing the use of KM for organisational transformation in the public administration organisations and where leadership may be the single most important enabler of successful KM and organisational transformation (Hislop, 2013; Handzic *et al.,* 2016).

Many of the studies on KM in the public-sector and government argue for leadership as a vital success factor for enabling the effective promotion of knowledge-sharing and creating an appropriate OC (Nath & Sharma, 2014). KM strategy development and implementing corresponding policies within the organisation to facilitate the management of knowledge resources and practices and for any KM initiatives are also considered and discussed (Hislop, 2013). Many of these studies in the public-sector also indicate that training and KM practices are a function of a knowledge-centred culture and organisational commitment (Hislop, 2013; Brito & Cardoso, 2012)

Several studies were conducted in the public-sector highlighting areas of KM in the government departments addressed by the literature, underlining challenges, opportunities and suggested KM frameworks, models and methodologies for implementing KM, such as in the following research, for example:

- Knowledge mapping and knowledge audit (Handzic *et al.,* 2016).
- Knowledge-sharing in government departments (Hislop, 2013).
- Intellectual capital management in government departments (Iskhar & Mahdaoui, 2014).
- KM and the learning organisation in government departments (Duffield & Whitty, 2016).
- Knowledge cultures and knowledge-based organisations in government departments (Said, 2015).
- KM and IT in government departments (Kaisara & Pather, 2011).
- KM and internets in government departments ((Ayoub, 2014).
- KM and training in government departments (Acheampong, 2014).
- KM and electronic government in government departments (Weeks, 2014); and
- KM and competitive advantage in government departments (Baporikar, 2013).

Case studies also presented the success story of the government departments employing KM for organisational transformation to improve OP and service delivery.

Finally, the researcher noted that all these studies indicate that government departments are confronted with different challenges and problems and thus there are different drivers behind their KM applications. Strong hierarchies and risk-aversion behaviour are two characteristics which tend to be unsupportive of a learning culture. The tendencies to apply regulations and legislation unquestioningly are other characteristics of many government departments, which subsequently, runs counter to the successful implementation or use of KM for organisational transformation.

Transforming the GDH by setting up a culture of knowledge is something that could be accomplished with the right leadership (Hislop, 2013). Such KM principles could go a long way to addressing the current challenges in the GDH.

### 2.8.5. Organisational Culture in government departments and KM

Örnek and Ayas (2015), Handzic and Durmic (2015), Moghaddam *et al.,* (2015) and Evans *et al.,* (2015) recognised that OC is the shared values and norms that exist in an organisation. It involves common beliefs and feelings, regularities of behaviour and historical processes (Al-Bahussin & El-garaihy, 2013; Muzondo & Ondari-Okemwa, 2015). These researchers argue that OC is the key factor in determining the outcome of the use of elements such as IT and management practices.

Previous studies by Al-Bahussin and El-garaihy (2013) have stressed the critical need for a conducive OC that recognises the critical importance of KM and an environment where people at all levels of the organisation contribute their knowledge for the collective good. To emphasise this approach, Örnek and Ayas (2015) believe that OC also influences the employees' willingness to share and contribute knowledge to the organisation.

In order to ensure that the right knowledge is brought to bear and at the same time for GDH to effectively use KM for its organisational transformation, for improved OP and service delivery, it requires an appropriate OC and structure (Handzic & Durmic, 2015; Moghaddam *et al.,* 2015). While there is universal consent by many scholars as to the strategic importance of KM, the researcher is of the view that leaders must inculcate a knowledge-sharing culture, as it is imperative to acknowledge that KM offers strategic advantages. The organisations must be a knowledge-based learning organisation. This necessitates a change in the OC (Mannie *et al.,* 2013) if there is to be a successful organisational transformation.

Mannie *et al.* (2013: 3-4) further stressed that "if the leadership commits and drives a collaborative, learning culture, then employees at lower levels will acknowledge that their leaders indeed reward innovative and collaborative work behaviour". Consequently, by focusing on developing an appropriate OC, collaboration and trust will improve. Similarly, the writers contend that "by acknowledging an organisation as a learning organisation, subject matter experts are more likely to be recognised, empowered and used in order to share their knowledge with employees and thus the overall organisation".

Evidently, the potential for using KM in assisting the GDH in improving OP and HSD itself is widely encouraged and recognised, especially if there is a positive relationship between a collaborative OC and a successful organisational transformation for the improvement in OP and service delivery (Mannie *et al.,* 2013).

### 2.8.6. Benefits of the use of KM for transformation in government

Dewah & Mutula (2016) acknowledge that the benefits of KM are difficult to measure and that there are still some elements of scepticism in terms of the improvement in OP as a direct result of using KM.

Literature has, however, demonstrated that KM can clearly provide faster and easier access to information already owned by the organisation for better decision-making (Arora, 2011). KM also helps to capture the organisational intellectual capital for easy re-use. Ermine (2010) further adds that the fundamental benefit of KM is social and cultural, focusing on people to address critical problems together, rather than individually hoarding knowledge.

Arora (2011) and Ermine (2010) contend that the transformation of governments through KM to transform their traditional services can help them achieve their goal to deliver high-quality services to their ever-demanding and enlightened customers – the citizens.

The benefits derived from this organisational transformation, using KM in line with the demands of the public-sector transformation and public-sector reform initiatives is the continuity of the services availability to the point of service delivery. It will further assist in maintaining high levels of quality service delivery to the citizens in these rapidly changing environments and provide accessibility to government services by the broader populace quickly and with ease, while attempting to decrease the costs of delivering these services (Arora, 2011).

Other benefits of using KM for organisational transformation are the increases in the effectiveness of decision-making processes, improving accountability, as well as the level of operational efficiency, flexibility of organisational processes, commitment and

involvement of employees; enhancing collaboration and strategic partnerships with stakeholders, as well as improving operational excellence (Arora, 2011).

To this end and specifically as far as the DoH is concerned, according to Zipperer, Townsend & Heilemann (2014), the following are the key benefits of KM for organisational transformation focused on the healthcare sector:

- Enable knowledge transfer: The healthcare profession requires extensive knowledge to flow through the various stages of patient care. This makes the smooth flow and exchange of knowledge – patient information and management – across healthcare an enormous challenge. KM could play a key role in facilitating effective knowledge transfer across healthcare entities, enabling improved HSD.

- Capture and re-use patient information and knowledge: With the failure of the electronic patient record system and poor or lack of communication and inter-operability among all the healthcare entities, public healthcare has failed to retain patients' information and knowledge. Some factors behind this is the shortage of medical professionals, healthcare entities operating independently, lack of a common platform for capturing and sharing information etc. There is therefore a need for KM processes which would enable the capture and re-use of knowledge and patient information during and after patient treatments.

- Better communication among stakeholders: Owing to the fragmentation among the GDH, regional healthcare centres (hospitals and clinics) and healthcare statutory bodies, public healthcare suffers from poor or weak communication among stakeholders. Effective KM will help improve communication and ensure knowledge creation, sharing and application across the various stages of the HSD process.

KM is a core competency for the healthcare industry and it should be integrated into the organisation's business strategy (Acheampong, 2014; Naranjo-Valencia *et al.,* 2016).

A number of potential KM solutions are emerging with great benefits for organisations. Toledo *et al.* (2016:102) recommend that "the most promising solutions are those which offer rich social experience where knowledge exchange is happening in an open and informal way. A significant amount of transparency and cultural change is required to implement such a solution but, if successful, it could bring benefits for the company".

## 2.9. Knowledge-based view

> Tomorrow's illiterate will not be the man who cannot read, he will be the man who has not learnt how to learn.
>
> Alvin Toffler (1970: 414)

The pioneering researchers such as Grant (2015), Tseng & Wu (2012) and Marulanda & Marcelo y López (2012) confirm that knowledge and information have become the underlying sources of competitive advantage to the knowledge-based view of an organisation.

Thus, the organisation's knowledge-based view is the knowledge assets of the organisation and its learning capabilities (Duarte-Alonso & Austin, 2017). This is the organisational ability to create knowledge through a process of dynamic interaction between tacit and explicit knowledge (Nonaka & Takeuchi, 1996) so that service workers can improve productivity. The knowledge-based view focuses on knowledge as the most strategically important resource of the organisation. Knowledge resources are particularly important to ensure that competitive advantages are sustainable.

### 2.9.1. Knowledge-based resources

The veteran researchers Mao *et al.* (2016), Toledo *et al.* (2016), Takeuchi' (2013) argue that knowledge-based resources are hard to imitate and that they are socially complex, immobile and heterogeneous and as such are major determinants of

sustained competitive advantage. A competitive advantage is shared, or collective and tacit knowledge (Nonaka & Takeuchi, 1996), which accounts for the causal ambiguity of knowledge as a resource.

More recent concepts of the knowledge-based view of organisations indicate that OC and organisational learning play key roles in the sustainability of competitive advantages (Amarakoon *et al.,* 2016). The major components of a knowledge-based view are intangibility and immobile resources. Furthermore, tacit knowledge produced through causal ambiguity forms the basis for improved productivity and service delivery for better returns for the organisation.

### 2.9.2. Knowledge-based performance and service delivery

Following the knowledge-based view as alluded to above, an organisation can create productive and efficient service-orientated organisational processes, which are required for improved service delivery. In today's world, knowledge workers contribute more to the world's GDP – hence the focus on OP and service delivery.

This shift to OP and services delivery has been accomplished through the use and integration of knowledge, especially in the developing world and the public-sector. The knowledge-based view by the organisation is therefore a natural evolution of the knowledge era.

This study is aligned with the knowledge-based view's emphasis on adding competitive value to HSD and OP by applying human expertise and the creation of organisational knowledge.

Thus, the arguments in this study centred on certain success factors that should be taken into consideration in enhancing the knowledge–based view from GDH and the use of KM for organisational transformation. These would include, among other factors, OC, structures, leadership and IT.

The view in this study was that the order of transformation of GDH for improved OP and HSD is driven by knowledge. The information era that we are in today is not determined by an abundance of natural resources (Duarte-Alonso & Austin, 2017) but

by the conviction that knowledge-based competition will be crucial for GDH success in the coming years.

Therefore, the researcher is of the view that the new economy would be driven by knowledge, moved by knowledge and its main input would be knowledge, which is by nature intangible. Consequently, it will be an economy of intangibles and an economic reform that will certainly make an impact on the public-sector reform, political reform and public administration for service delivery.

### 2.10. Review of the conceptual framework

The conceptual framework was developed on the basis of the OP concepts definition and conceptual knowledge-based performance and the service delivery model in Defining  (page xxii) and Section 2.5 of the literature review in this chapter. The hypothesised high-level relationships for the empirical research are illustrated in Figure 13.

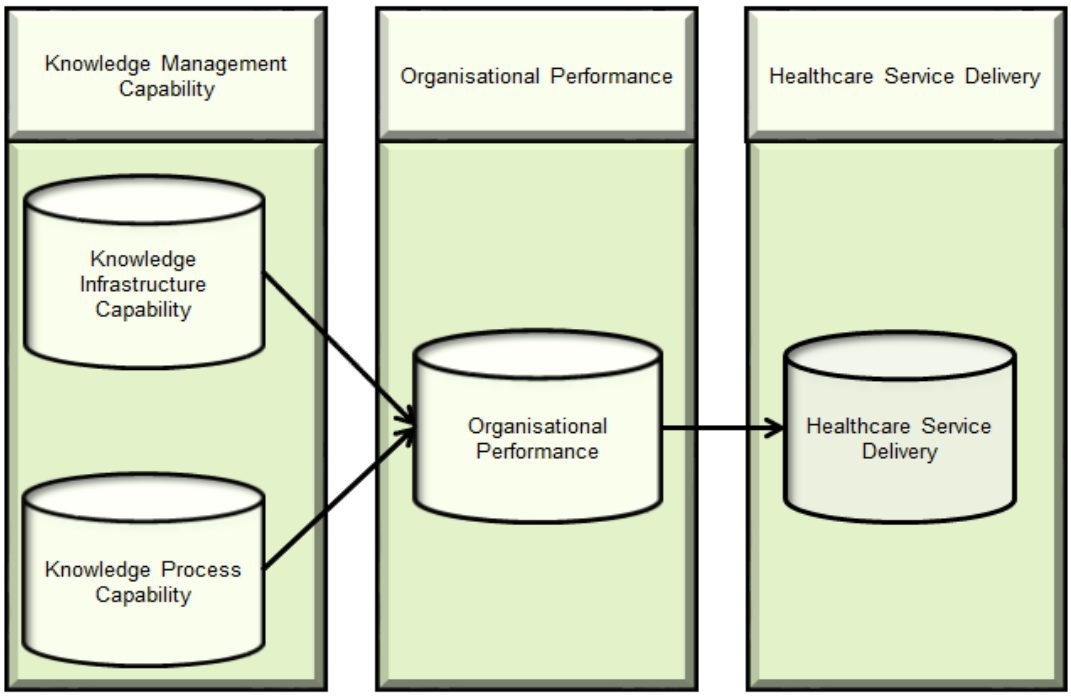



Figure 13: KM Capability Research Framework

Figure 13 illustrates the organisation's dynamic capabilities, knowledge infrastructure capability and knowledge process capability, as direct sources of superior OP as

discussed in Section 2.5.1. They are the organisation's abilities to integrate, build, and reconfigure internal and external knowledge and competences to address rapidly changing environments and enables the organisation to effectively respond to market changes through leveraging these resources (Liu et al.*et al.,* in press). Liu et al. (*et al.* (2014) went further to add to their commendable view that KM capability not only refers to the ability to acquire knowledge and information, but also to the organisational capability to protect knowledge in order to encourage staff to use this ability as a tool to work with higher efficiency.

Thus, investigating the relationship between KM capability and OP is essential as the findings can help the businesses to further explore the consequences of KM. Cho & Korte (2014) noted that there is a lack of study that investigates the relationship between KM capability and healthcare non-financial performance as in HSD. Moreover, the findings of previous researches are still inconclusive with regards to the KM capability-OP link which some researchers found that not every dimension of KM capability is significantly correlated to OP (Mills *et al.,* 2011).

The latest and well-articulated definition by Ha *et al.* (2016) is that knowledge infrastructure capabilities consist of information technology, OC and OS and reflects organisational agility whereas the knowledge process capabilities consist of knowledge creation, sharing, storage and application, reflects the organisational ability. Therefore, these are the organisational capabilities that enable the organisation to cope with unpredictable changes and thrive in a continually changing environment. The agility and ability enables organisations to mobilise and deploy critical knowledge resources and manage their assimilation and exploitation across functional boundaries and respond to environmental changes and opportunities effectively, thereby enhancing OP and improve delivery of high quality healthcare services (Ha *et al.,* 2016; Cho & Korte, 2014).

According to the above-mentioned literature, as explained in the previous paragraphs and the researcher's experience from business practice, the researcher believes that relations between IT, OC, OS and KM can be established. The extensive literature that has been examined thus far from Ha *et al.* (2016), Cho and Korte, (2014), Liu *et*

*al.* (2014) and Mills and Smith (2011) among others, demonstrated a relationship between KM capability concepts and OP, with a positive impact on service delivery.

Indeed, for a long time, literature addressing the KM-OP link consisted of theoretical papers proposing hypothetical relationships between aspects of KM and organisational outcomes and case studies of highly successful KM applications (Nonaka & Takeuchi, 1996; Zaim, Tatoglu & Zaim, 2007). The situation has changed recently, as studies empirically assessing the impact of KM performance in larger samples of organisations have appeared (Krylova *et al.,* 2016; Kianto *et al.,* 2014). The overall conclusion derived from these studies is that KM has some impact on OP and service delivery (Amir & Parvar, 2014), although there is some disagreement as to whether this impact is direct or mediated by some other variables, such as organisational factors and processes (Guthrie & Dumay, 2015).

Despite the growing evidence of KM's contribution to OP and service delivery, there are several issues that have not yet been fully addressed in the existing studies (Guthrie & Dumay, 2015). First, OP has been interpreted and measured very differently across existing studies, ranging from innovativeness (Tseng & Wu, 2012; Kianto *et al.,* 2014) and product and employee improvement (Mohammad & Yusof, 2013) to product leadership, customer intimacy and operational excellence (Amir & Parvar, 2014) and competitive positions (Krylova *et al.,* 2016; Kim *et al.,* 2014).

Second, most of the studies focus on KM processes rather than on organisational factors. Although KM processes can be stimulated by particular organisational factors and management practices, they also exist naturally in any organisation irrespective of managerial efforts (Ha *et al.,* 2016).

As a result, studies that focus only on KM processes cannot inform managers about solutions for improving their organisation's performance and service delivery through better management of knowledge. In line with this argument, the emerging knowledge governance approach highlights the absence of studies of formal organisation from the KM perspective and calls for more research into this field (Foss, Husted & Michailova, 2010).

Third, there is a paucity of research, until recently, examining the interrelations of several KM practices and their contribution to OP and service delivery. Indeed, (Foss *et al.,* 2010) argue that the ways in which formal governance mechanisms may interact in influencing the outcomes of knowledge processes have been under-researched. This study addresses some of these gaps and examines how KM capability (knowledge infrastructure capability and knowledge processes capability) impact organisations' performance and service delivery.

In this connection, the study also analysed the knowledge-based OP and HSD model (Figure 14) of KM capability in relation to OP and healthcare service delivery (Mills & Smith, 2011).

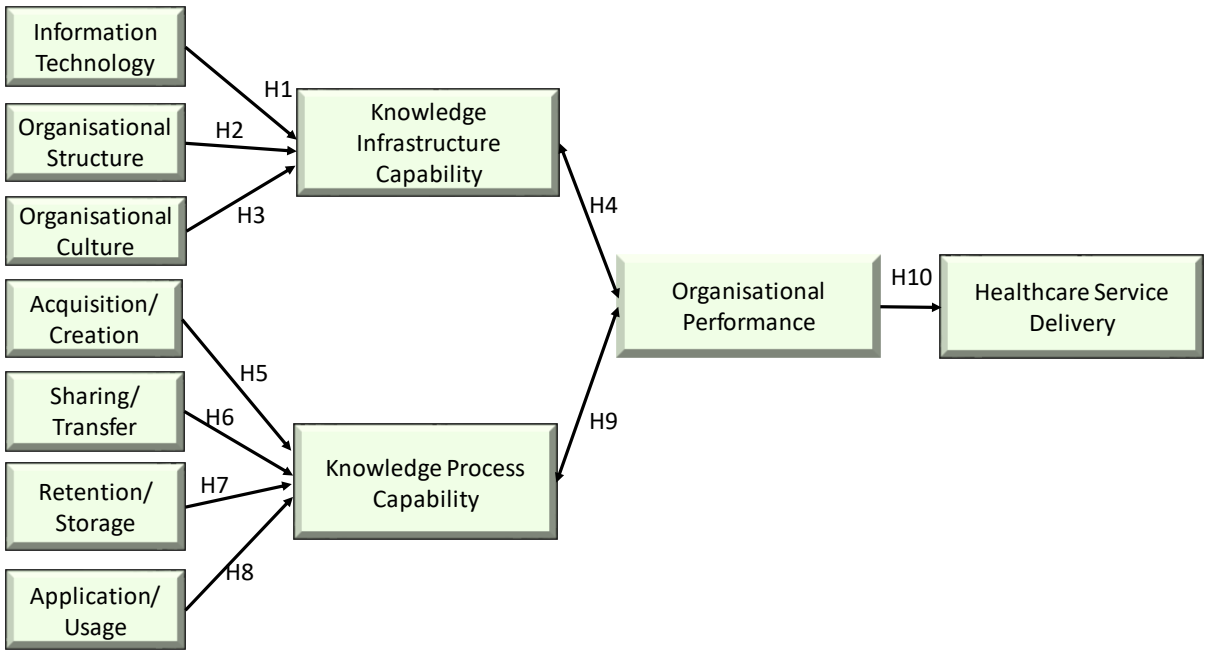



Figure 14: Knowledge-based OP and HSD model

The knowledge-based OP and HSD model in Figure 14 show the actions which support collaboration and integration. The framework is designed for measuring KM performance and HSD. This framework is based on the infrastructure capability and process capability approach as discussed at the beginning of this section.

a) Knowledge infrastructure capability

- Technological capability: Refers to the fundamental information technology structure of the organisation (Mao, Liu & Zhang, 2015; Grundstein, 2013), including hardware, software, internal and external system networks and databases.

- Organisational structural capability: Refers to the formal operation and command structure, as well as the presence of norms and trust mechanisms. The literature suggests that structures that can encourage creativity and agility form an effective KM structure. Structure is necessary for leveraging the technological architecture and communication networks (Chigada & Ngulube, 2015). Structural elements in organisations have an unintended downside of inhibiting the collaboration and sharing of knowledge resulting in a barrier for KM excellence. However, Ramohlale (2014) pointed out that people in organisations can avoid structural barriers by developing their own processes.

- Organisational cultural capability: Refers to the organisation's vision and values and its attitudes toward learning and knowledge transfer. Further, OC influences the adoption of KM initiatives and is considered one of the most significant hurdles of KM effectiveness. Thus, although shaping the culture to align with KM goals is essential, the researcher's view is that in practice this alignment is a complex process, particularly in organisations having a hierarchically structure and bureaucratic controls. Cultural shifts are likely to be easily acceptable in companies with fewer employees, smaller groups in large organisations and companies that are entrepreneurial in nature. In large organisations, KM can be implemented more effectively in teams defined by social networks and subsequently linking the teams intra-organisationally.

b) Knowledge process capability

Knowledge process capability refers to the capability of a process to transform the knowledge that is stored in the form of standard operating procedures and routines

throughout the firm into valuable organisational knowledge, experience and expertise. To leverage upon the knowledge infrastructure capability (culture, structure and technology), KM processes need to be properly in place so that knowledge can be captured, stored, shared and applied effectively. The four dimensions of knowledge process capability consists of:

- Knowledge acquisition/creation
- Knowledge transfer/sharing
- Knowledge retention/storage
- Knowledge application use

These four dimensions are the minimum set of KM activities that are required to reflect the KM process prevalent in an organisation.

Therefore, the knowledge-based OP and healthcare model (Figure 14) follows a behaviour that identifies the three levels of knowledge infrastructure (Information technology, OS, OC), maps these for KM across the key business processes.

In the literature, KM is often presented as a combination of both technical and human aspects. Regarding the KM capabilities conceptual framework (Krylova *et al.,* 2016), the researcher suggested the proposed knowledge-based OP and service delivery model (Figure 14), which investigated the interaction of the KM processes and organisational factors in improving OP for HSD.

The literature review shows a number of critical success factors for KM and their interrelation and the role they play in achieving improved OP and service delivery (Rasula, Vuksic & Stemberger, 2012). Research conducted in Croatia suggests that knowledge process capability positively affects OP and service delivery improvement (Andreeva & Kianto, 2012). According to Bordoloi & Islam (2012), results collected in a logistics operations context prove the existence of a strong positive relationship between a knowledge process capability and OP.

The results of the study conducted by Zheng, Yang and McLean (2010) suggest that knowledge infrastructure capability fully mediates the impact of information technology, OC and OS on organisational effectiveness. (Rasula *et al.,* 2012) show that combining the knowledge infrastructure capability and knowledge process capability indicates a complementary relationship, which implies the synergistic effects of KM on OP.

Finally, the results of numerous researchers like Amir and Parvar (2014), Aboelmaged (2014), Zaied *et al.* (2012) and Moballeghi and Moghaddam (2011) show that KM capability affects OP positively.

There is a general consensus from the KM literature that KM is positively related to OP (Tow, Venable and Dell (2015), Said (2015) and Al-Bahussin and El-garaihy (2013) showed that both the components of KM capability, knowledge infrastructure capability and knowledge process capability; make a positive impact on organisational effectiveness.

Liu and Deng (2015), Edwards (2015) and Liu *et al.* (2014) found that KM capabilities affect innovation. However, in order to achieve considerable improvement in innovativeness and OP and effectiveness, Zack *et al.* (2009) found that both the knowledge infrastructure and knowledge process capabilities have to correspond with one another in order to impact positively on OP.

### 2.10.1. Knowledge infrastructure capability hypotheses

Knowledge infrastructure capability consists of information technology, OC and OS. Research shows that the better the collaboration and trust among management and employees, the better the processes of creating and sharing knowledge (Krylova et al.*et al.,* 2016), and the better the organisational climate, the better the transfer and application of knowledge (Fleig-Palmer & Schoorman, 2011). Moreover, organisational structure and OC directly affect KM practices (Zeng et al.*et al.,* 2010). Also, the better the use of IT tools, the better the knowledge creation and storage processes (Krylova et al.*et al.,* 2016).

IT is an enabler and provides the organisation with a platform for the integration of information and knowledge, as well as acquisition/creation, sharing/transfer, retention/storage and application/usage of the organisational knowledge resources (Pandey & Dutta, 2013) to enhance OP and create value. The survey conducted by Kruger and Johnson (2010) shows that ICT and information management are prerequisites for and enablers of, KM.

According to Bharadwaj *et al.* (2015), technology comprises a crucial element of the structural dimension needed to mobilise social capital for the creation of new knowledge. Thus, technology is able to overcome the barriers of time and space that would otherwise be limiting factors in KM activities. It also serves as a repository in which knowledge can be reliably stored and efficiently retrieved. The information technology construct in the knowledge-based OP and healthcare model (H1: Figure 14) is tangible and it acts as an enabler for facilitating KM initiatives in the organisations. It is thus hypothesised that:

**H1**: Information Technology has a positive impact on knowledge infrastructure capability.

On the other hand, OS is largely reporting relationships in the organisational hierarchy and the rules and regulations for the co-ordination and management for the organisational resources (Digan, 2015; Ajagbe *et al.,* 2015; Vimba, Coetzee & Ukpere, 2013). Ekionea *et al.* (2011) argues that changes in the OS are occasionally necessary to allow for effective knowledge creation and knowledge transfer, which have been positively associated with improved OP and service delivery. OS is the second most critical factor and a major enabler by many researchers for successful KM implementation (Bharadwaj *et al.,* 2015).

New organic organisation structure construct in the knowledge-based OP and healthcare model (H2: Figure 14) encourages effective and efficient communication for knowledge creation and sharing. It is hypothesised that:

**H2**: OS has a positive impact on knowledge infrastructure capability

Finally, OC is a collection of values, beliefs, behaviours and symbols (Digan, 2015; Said, 2015; Kagaari & James, 2011), which, when combined, creates a knowledge-friendly culture. This is an important contributory factor to effective KM (Al-Bahussin & El-garaihy, 2013).

Thus, OC combines the elements of people and organisational climate. The researcher believes that the better and higher the trust, creativity, teamwork and collaboration among employees, the greater the positive influence on knowledge infrastructure capability. Also, the more the KM activities are integrated into processes, the greater the positive influence on knowledge infrastructure capability (Al-Bahussin & El-garaihy, 2013) and provides mediating effects on the relationship between OC and knowledge infrastructure capability.

OC is very important in leveraging KM (Said, 2015). Thus, OC in knowledge-based OP and healthcare model (H3: Figure 14) it is considered both as a facilitator and a hurdle/barrier for effective KM. Culture of an organisation has key influence on knowledge infrastructure capability, more specifically, on the effectiveness of knowledge (Zheng *et al.,* 2010). Since there is a crucial role of OC in KM, it is imperative to influence and develop knowledge culture in an organisation. As a result, shaping culture is central to organisation's ability to manage its knowledge more effectively. Thus, it is hypothesised that:

**H3:** OC has a positive impact on knowledge infrastructure capability.

Mediation of knowledge infrastructure capability between the relationship of information technology, OS and OC and OP and HSD.

Literature suggests that knowledge infrastructure capability is necessary for effective KM (Pandey & Dutta, 2013) and has found that knowledge infrastructure capabilities are positively related to OP (Mao *et al.,* 2015; Chan & Chao, 2008; Paisittanand, Digman & Lee, 2007).

As suggested by Zheng *et al.* (2010) and as illustrated in the in knowledge-based OP and healthcare model (H4: Figure 14), mediation of KM practices between organisational factors and knowledge infrastructure capabilities should be explored. It is hypothesised that:

**H4:** Knowledge Infrastructure capability has a positive impact on OP and service and HSD.

### 2.10.2. Knowledge process capability hypotheses

The pioneering researchers Gold *et al.* (2001) maintain that the elements of knowledge process capabilities are all required for leveraging the infrastructure capabilities. Knowledge acquisition/creation is the organisation's capacity and capability to identify and acquire both external and internal knowledge to support its business operations.

Knowledge from these various sources is filtered and evolved through the integration of information, technology and human capital to reinforce OP and service delivery. KM cycle in the knowledge-based OP and healthcare model (H5: Figure 14) starts with creation and/or acquisition of knowledge which has to be organised, mapped and/or formalised to transform it in reusable form. It has to be made accessible to people, or disseminated and/or shared with everyone in the organisation. Finally, it has to be applied, used, reused and/or exploited for achieving the organisational benefits. Acquisition-oriented KM processes are oriented towards obtaining knowledge. Thus, on the basis of above mentioned studies, it is hypothesised that:

**H5:** Knowledge acquisition/creation has a positive impact on knowledge process capability.

Aboelmaged (2014) points out that knowledge-sharing reflects how knowledge is usually distributed and interpreted both vertically and horizontally within an organisation to improve OP and HSD.

Knowledge-sharing/transfer is therefore expected to influence OP as a result of the speedy conversion of data into information and information into usable knowledge to maximise the benefits in favour of the organisation.

Knowledge sharing/transfer also refers to the process of sharing knowledge among the employees in an organisation. It is illustrated in the knowledge-based OP and healthcare model (H6: Figure 14) is an effective retrieval mechanism that allows for quick and easy access and sharing of knowledge. Thus, on the basis of the above, it is hypothesised that:

**H6**: Knowledge-sharing/transfer has a positive impact on knowledge process capability.

Knowledge retention/storage in the knowledge-based OP and healthcare model (H7: Figure 14) refers to knowledge storage and retrieval, whereby individual and organisational knowledge repositories are identified, organised, structured and maintained. It is the securing of organisational knowledge for exclusive use by the organisation.

This process is critically necessary in the model to allow the organisation to maintain its competitive advantage for much longer, thus preserving the value of knowledge for the organisation (Ekionea *et al.,* 2011). On the basis of the above, it is hypothesised that:

**H7**: Knowledge retention/storage has a positive impact on knowledge process capability.

Finally, knowledge application/usage is the main objective of KM and it refers to an organisation's timely response to changes in the environment and technology by using the newly-created knowledge for improving its services and organisational processes (Cohen & Olsen, 2015). This point is further supported by Choi *et al.* (2010) who maintain that knowledge application is the organisation’s ability to effectively and efficiently apply knowledge at a faster pace to create value and increase the competitive advantage for the organisation.

Knowledge application is significantly important in the improvement of OP which, in turn, has a direct impact on the delivery of quality services (Aboelmaged, 2014).

It is important that KM helps the organisation to use the acquired knowledge to adjust strategic direction, solve new problems and improve efficiency. A regular review is, in terms of the knowledge-based OP and healthcare model (H8: Figure 14) therefore, required to know what has worked well and what has not during the lifecycle of KM. These processes also enable the organisation to replace knowledge that has become outdated. Thus, based on the above, it is hypothesised that:
**H8**: Knowledge application/usage has a positive impact on knowledge process capability.

Mediation of knowledge process capability between the relationship of knowledge acquisition/creation, sharing/transfer, retention/storage and application/usage and OP and HSD.

As suggested by Zheng *et al.* (2010) and as illustrated in the in knowledge-based OP and healthcare model (H8: Figure 14), the mediation of KM practices between KM processes and knowledge process application capability should be explored. Thus, it is hypothesised that:

**H9:** Knowledge process capability has a positive impact on OP and HSD.

### 2.10.3. Organisational performance and healthcare service delivery

There is general consensus in the literature, as pointed out by Mills and Smith (2011) and Emadzade *et al.* (2012), who maintain that KM is directly associated with and linked to OP and the related KM elements of infrastructure capability and process capability. These have a significant and positive impact on OP for improved HSD. Furthermore, the results of the study conducted by Zack *et al.* (2009) indicate that KM practices are positively associated with OP and service delivery.

Quality HSD is the direct result of an improvement in OP (Aboelmaged, 2014). Crucial to effective service delivery is the organisation's ability to be responsive to its

environment by constantly improving its OP (Pallas, Curry, Bashyal, Berman & Bradley, 2012). Environments are constantly changing, so the ability to adapt is imperative for effective OP.

Accordingly, organisations should concentrate on monitoring OP activities and taking corrective action to reduce imperfections during the service delivery stage, thereby providing high-quality services (Baird, Jia Hu & Reeve, 2011). Finally, a significant positive association was found between OP and quality HSD (Baird *et al.,* 2011). Thus, it is hypothesised that:

**H10:** OP has a positive impact on HSD.

### 2.11. Summary

This chapter provided a detailed review and background of KM literature. The KM theoretical framework was deliberated on and focused on investigating the breadth and depth of KM. It provided the perspective on other bodies of literature and various empirical studies conducted that have a bearing on this study in the context of OP, HSD, public-sector reform and governance, organisational transformation and a knowledge-based view.

The conceptual framework on OP concepts, knowledge-based performance and HSD model was also discussed, concluding this chapter. Chapter Three will outline the research design and methodology.

# CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

> Necessity is not the mother of invention. Knowledge and experiment are its parents. It sometimes happens that successful search is made for unknown materials to fill well-recognised and predetermined requirements. It more often happens that the acquirement of knowledge of the previously unknown properties of a material suggest its trial for some new use
>
> Willis R. Whitney (1960): National Academy of Sciences

## 3.1. Introduction

The previous chapter reviewed the literature on KM, OP, HSD, public-sector reform and governance, organisational transformation, the knowledge-based view and the conceptual framework of KM capabilities.

This chapter consists of eight sections. Section 3.1 commences with an introduction, followed by a perspective on the philosophical epistemological stance for the study in Section 3.2. The subsequent sections present detailed descriptions of the methodological approaches in Section 3.3, the research design in Section 3.4, the data analysis in Section 3.5. This is followed by the evaluation of the research methodology in Section 3.6 and ethical issues in Section 3.7. The chapter ends with Section 3.8, which presents the conclusion.

The objective of this chapter is to outline the research methodology employed in this study and to address the research problem through the research questions. Research methodology refers to an inquest for knowledge and explains how the research was conducted (Castro *et al.,* 2010). It is therefore, a process of a scientific and systematic search for pertinent information on a specific topic to solve a research problem. Furthermore, it is a methodology which is concerned with the understanding a researcher has about social reality, the interpretation given to a phenomenon and the essential apparatus put in place for designing appropriate research methods comprising techniques employed in getting to the issues to be addressed (Creswell, 2014).

Therefore, a methodology can be considered as a set of procedures that can be followed for achieving an objective. The objective in this sense is that of exploring an observed phenomenon and getting to the root of its possible causes and effects (Terrell, 2012).

The purpose of this chapter is to discuss empirical research with focus on the objectives formulated in Section 1.5 in Chapter One. The literature review showed that certain factors ought to be considered if KM is to be used for improvement in OP and HSD. These factors pertain to determining the KM capabilities, OP and HSD.

The operational objective of this research study was to empirically determine by means of qualitative and quantitative research, the degree to which these factors are related and could be used to improve OP and HSD in an organisation. The constructs that were included in the conceptual model were operationalised to determine the degree to which the independent variables (knowledge infrastructure capabilities and knowledge process capabilities) influence the dependent variables, OP and HSD. The dependent variables would change as a result of variations in the independent variables. Ultimately, the purpose was to develop an SEM of knowledge-based OP and a HSD model to verify the theoretical conceptual model.

The research design, research method and statistical data analysis used to achieve the objectives of this study are subsequently discussed. The discussion focuses on guidelines found in the literature and its application by the researcher in order to achieve the empirical research objectives.

The exploratory principal component factor analysis was also used here to identify the factors that influence OP and HSD and the SEM technique was used to develop the knowledge-based OP and HSD model was comprehensively discussed. Essentially, in this chapter, the data structure and the empirical models used for this study are described.

In Chapter Two, it was established from literature that, because of the need to transform the GDH and to implement public-sector reform initiatives, the use of KM was found to have improved, inter alia, OP and HSD.

It was further established that improved OP and HSD can be observed in effective knowledge infrastructure and knowledge process capabilities (Zaied *et al.,* 2012). Other researchers, such as Tseng (2016), Tseng & Wu (2012) and Ogbadu, Abdullahi & Abdullahi (2013), also demonstrated the close relationship between OP and KM.

The literature review was not intended merely as a means to an end; the end was envisaged as achieving an understanding of the application of KM in the public-sector and accepting that KM is the strongest contributor and driving force to general OP and improved HSD in the GDH.

The chapter further explains the data collection and sampling procedures that were used to ensure the reliability and authenticity of the study (Palinkas, Horwitz, Green, Wisdom, Duan & Hoagwood, 2015). The research design was used to structure the research and show how all the major parts of the research project collaborate in an attempt to address the research questions. Essentially, this research design provided the mechanism that holds the entire research project together (Palinkas *et al.,* 2015).

In order to build understanding so as to answer the research question, this chapter considered the various schools of thought from which are derived the various methods of research.

At the same time, the research method employed for this study, which is mixed-methods research, was highlighted using the thirteen distinct steps in the mixed-methods research process, as illustrated in Figure 15. This involved collecting, analysing and interpreting quantitative and qualitative data in a single study. Using Determining the research/mixing rationale

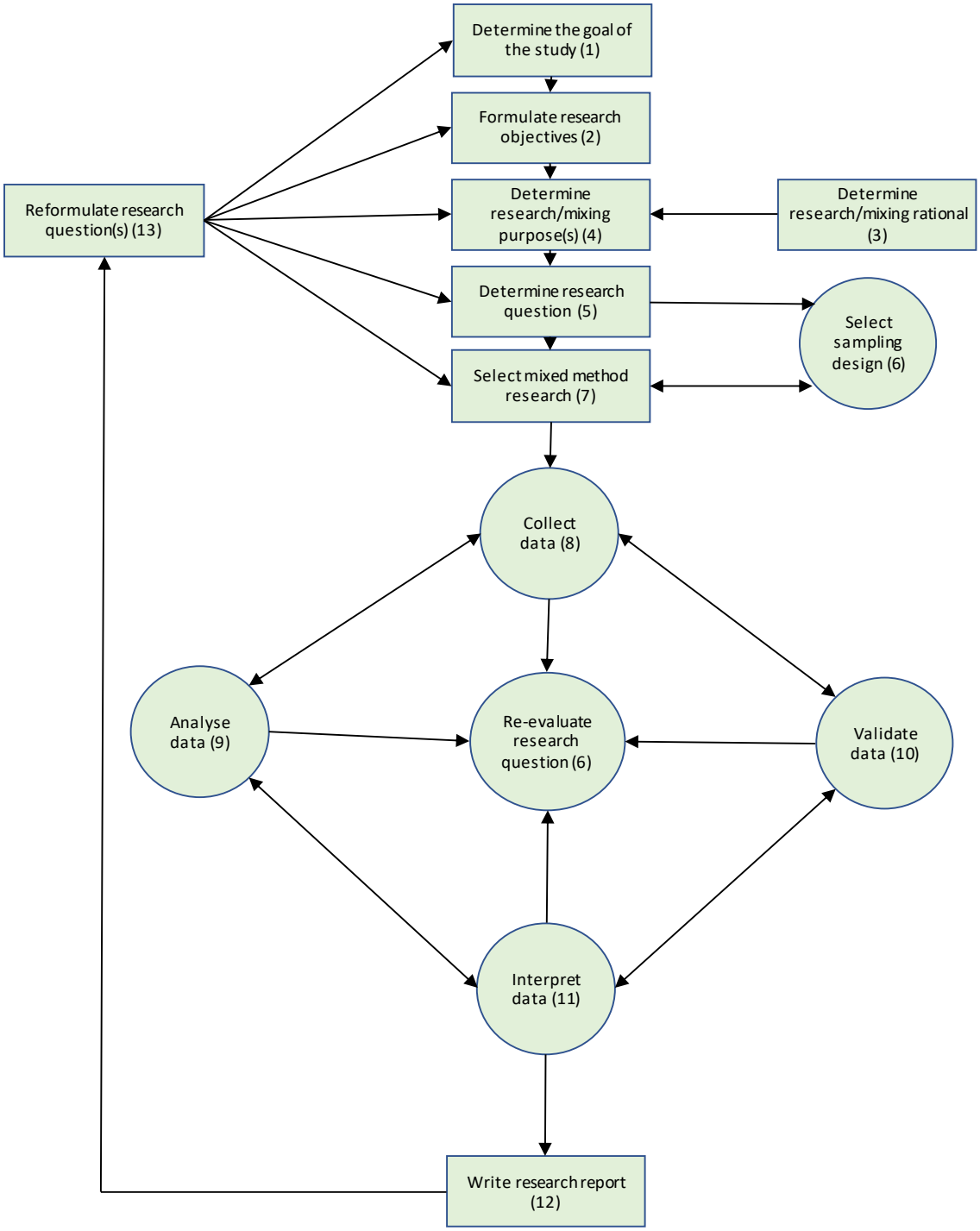



Figure 15: Steps in a mixed-method research process

Source: Onwuegbuzie & Leech (2006: 476).

Figure 17 as a guide for this study, the mixed-methods research was conceptualised as comprising the following steps:

- Determining the goal of the study

- Formulating the research objective(s)
- Determining the research/mixing purpose
- Determining the research question(s)
- Selecting the sampling design
- Selecting the mixed-methods research design
- Collecting the data
- Analysing the data,
- Validating/legitimising the data
- Interpreting the data
- Writing the mixed-methods research report and
- Reformulating the research question(s)

This chapter also deliberated on what type of research design should be used to investigate the interdependence between the intensity of KM activities and OP and HSD empirically.
This research design should demonstrate how the results of the literature review and the empirical data could be utilised for KM capitalisation by the GDH for improvement in OP and HSD.

### 3.2. Philosophical and epistemological perspective

Generally, social research aims to find patterns of regularity in social life and to focus on how and why things actually are what they are (Babbie, 2015). The aim was to study social patterns in social life to proffer an explanation as to why or how the phenomenon is the way it is so that a verifiable solution can be sought (Babbie, 2015). Since the main focus of this research study was to uncover and discover patterns that helped explain and achieve the aim and objectives of the envisaged research, a methodological approach was required to facilitate the research process (Creswell, 2014).

The purpose of this section therefore, is to provide a background to the philosophical stances of this research. This research was done applying both qualitative and quantitative methods using data from the survey, interviews and documents. Since

both quantitative and qualitative data was analysed and interpreted in order to obtain the research results, the epistemological stance of this study was identified to be the infusion of the objectivist and positivist perspectives.
In addition to being quantitative or qualitative, Graff (2014) posited that all research is executed from a philosophical base or the researcher's stance on aspects such as truth and validity and that determines acceptable research methods to be adopted. Within this philosophical base, the researcher made assumptions about knowledge, its construction, how it can be obtained and its validity. This view on what knowledge was and how it could be obtained was the epistemological base of the research study (Creswell, 2014).

For research in KM, (Creswell, 2014) identifies the objectivist and positivist paradigms. Positivists generally assume that reality is objectively given and can be described by measurable properties which are independent of the observer (researcher) and his or her instruments. Constructive researchers start out with the assumption that access to reality (given or socially constructed) is only possible by means of social constructions such as language, consciousness and shared meanings.

Therefore, in the positivism and objectivism schools of thought in the social sciences, attempts were made to explain the perspectives of social research for any chosen methodology, be it qualitative, quantitative or mixed-method. The researcher gives this perspective in the next sub-sections.

### 3.2.1. Paradigms and schools of thought in research

In doing research, the postmodern view in social research represents a critical dilemma for scientists (Bryman & Bell, 2015). Creswell (2014) adds that researchers approach research with certain beliefs and assumptions on how social reality is construed and understood. Although their task is to observe and understand what is really happening (Babbie, 2015), they are all human, so they bring personal beliefs that put a different colour code on what they observe and how they understand and explain it. It is unlikely that people can step totally outside their humanness to see and understand the world as it really is — that is, independently of all human viewpoints (Babbie, 2015) and other worldviews, known as paradigms (Creswell, 2014).

“Whereas the modern view acknowledges the inevitability of human subjectivity, the postmodern view suggests there is actually no objective reality to be observed in the first place but only our several subjective views” (Babbie, 2015; 10). This view is supported by Denzin (2012), who believes that, although the worldviews or paradigms are viewed as the methodological paradigm wars in the social sciences, they are focused on philosophical beliefs and assumptions of specific methodological strategies, such as positivism, objectivism, constructivism, realism, pragmatism and postmodernism (Creswell, 2014; Denzin, 2012). They all embody different philosophical issues about:

- Ontology: This is the nature of reality that the researcher investigates
- Epistemology: The relationship that holds between the reality being researched and the researcher, what is and how one can gain knowledge about it
- Rhetorical issue: The use of specific terms and personal literary narrative by the researcher
- Axiological issue: The values that the researcher aggregates to the research process
- Methodological issue: The conceptualisation of the research process in terms of techniques to be used in investigating the reality

In light of the paradigms clarified so far, the reality that was being investigated in this study came about as a result of human dealings with the concept of the use of KM for the improvement of OP and HSD by the GDH. This had to do with an understanding of the GDH environment.

Once the paradigms that generally underpin research were examined, it was beneficial to consider some of these in detail in order to evoke a mixed-methods methodology and the methodological strategies or paradigms used in undertaking this research.

#### 3.2.1.1. Positivism

The positivist paradigm underlies what are called quantitative methods (Johnson *et al.,* 2007). This school of thought holds that knowledge about anything must be observable and be backed with empirical evidence. The research design implication for the logical positivist researcher is that they can design the entire research process *a priori* by choosing the concepts, variables and hypotheses before the study begins (Denzin, 2012). This limits the role of personal interpretation for the period between the time the research design is set and the time the data is collected and analysed statistically.

To this end, Bryman and Bell (2015: 11) describes positivism as "an epistemological position that advocates the application of the natural sciences to the study of social reality and beyond". Positivism therefore underpins the quantitative method of conducting research (Johnson *et al.,* 2007).

Quantitative methods employ numerical descriptions of trends, attitudes and opinions of a particular population (Neuman, 2014) by studying a sample of that population. Researchers then generalise claims of the said population from sample results (McEvoy & Richards, 2006). The instruments of research that fall under this paradigm are questionnaires, structured interviews and statistical analysis of data.

Because one of the instruments of research used for data collection was a questionnaire, the positivist paradigm became a *sine qua non*. This paradigm explains why, in a quantitative method, for example, the hypothesis was proposed to draw inferences about a phenomenon from the sample to a stated population and then tested them. These instruments are explored in more detail in Section 3.3.

#### 3.2.1.2. Objectivism

At its most basic level, the objectivist approach is an ontological position that implies that social phenomena confront us as external facts that are beyond our reach or influence (Palinkas *et al.,* 2015).

This method was considered the most appropriate means of undertaking research based on people and the learning needs (Creswell, 2014; Denzin, 2012). The study examined the relationship between KM capabilities (infrastructure capabilities and knowledge process capabilities), OP and HSD. The most common conception of instruction based upon objectivist approach is the transmission of knowledge, a knowledge that is prescribed by the subject matter analysis (Creswell, 2013; Denzin, 2012; Neuman, 2014).

OP and HSD were defined as the result of using KM capabilities to ensure that employees have gained all the knowledge and information needed to fully complete a task beyond initial satisfaction. It was thus important to choose a research lens that allowed an objective views and experiences of employees in different business units in the GDH and related regional healthcare entities to be carefully considered. Hence, the above-mentioned discussion, supports the notion that the epistemological stance of this study is the infusion of objectivist and positivist research as an approach that appeared appropriate and was used in this study.

## 3.3. Methodological approaches of research

The aim of this chapter was to design a framework in terms of a methodology that assisted this study in answering the research question, so it was appropriate to advance some approaches to research that apply. The approaches that supported this study sufficed. Finally, the reasons for the selected approach were given. This was done to appreciate from whence, in terms of their basis of assumptions, these methodologies originated.

### 3.3.1. Case-study

Case studies have been defined as research situations in which the number of variables exceeds the number of observations (Flyvbjerg, 2016; Yin, 2014). Researchers generally describe case studies as a method that seeks to study phenomena in their contexts, rather than independently of context (Flyvbjerg, 2016; Yin, 2014).

The case-study approach therefore requires the researcher to focus on the details of a case and to analyse its context (Yin, 2014). It is the examination of a specific phenomenon, an event or institution (Yin, 2014). A specific entity under study was an organisation in the form of the GDH. Flyvbjerg (2016) defines the approach further as a research paradigm employed in a study variously known as qualitative research in which data are gathered relative to an event for the purpose of learning more about an unknown or poorly understood situation.

The case-study approach was the main approach employed in undertaking this research because it provided the potential for a richer, more in-depth understanding of the issue being studied (Flyvbjerg, 2016) and can be used for organisational problem-solving.

A further qualification by Flyvbjerg (2016) is that the focus of a case-study is the specific entity (organisation, group, event, problem, or process) under study, a study of the GDH as an organisation matched this scenario.

Table 9 demonstrates the suitability of the case-study approach to this study. In fact, the key characteristics of case studies as illustrated in Table 9 seem to be the preferred strategy when “how” or “why” questions are being posed and when the investigator has little control over events. In general, the key characteristics of case studies can be generalised to theoretical propositions and not to populations or universes. In this sense, the case study does not represent a ‘sample’ and in doing a case study, the goal was to generalise theories and not to enumerate frequencies.

The characteristics of the case study correspond to the area under investigation: the concept of KM at the GDH was not a commonly-known phenomenon. A case-study was therefore considered the most appropriate tool in the critical, early phases of a new management theory (Flyvbjerg, 2016), when key variables and their relationships were explored.

Yin (2014) again posited that the case-study follows different approaches concurrently to investigate and answer questions with the intention of advancing objectivity. The view which was further supported by Flyvbjerg (2016) when he argued that this

approach has some degree of validity, as it combines several different sources of information and deals with a variety of evidence, including organisational documents and interviews. All of the above sum up the resolve to use the case-study approach as its chosen methodology in a mixed-methods approach.

Table 9: Key Characteristics of Case-study and application to this research

| Characteristics of Case Study | Application to this study |
|---|---|
| Phenomenon is examined in a natural setting | Interviews with the staff at the GDH and related healthcare centres in Gauteng Region A |
| Data are collected by multiple means | Data collected by interviews, questionnaires and organisational documents |
| One or few entities are examined | Research concerned itself with the understanding of knowledge management, behaviour, perceptions held by staff at the GDH |
| The complexity of the unit is studies intensely | The focus was on the organisational and healthcare service delivery and knowledge management.no definitive hypothesis was tested because the approach was more exploratory. The outcome can be used as a building process for further research to be conducted. |
| Case study more suitable for exploration, classification and hypothesis development stages of the knowledge-building process | No definitive hypothesis is tested because he the approach was more exploratory. Outcomes could be used as a building process for future research to be conducted. |
| No experimental controls or manipulations are involved | No experimental controls or manipulations are involved |
| The investigator may not specify the set of independent and dependent variables in advance | Independent and dependant variables were not identified in advance |
| The results derived depend heavily on the integrative powers of the investigator | The results from the study was drawn front a questionnaires, organisational documents and interviews. Great care was taken in the construction and planning of the interviews and questionnaires with regard to reliability and validity. |
| Changes in the selection and data collection methods could take place as the investigator developed new hypotheses | Site selection and appropriateness of the environment did not change during the planning stages, as the aim of the study was clarified expanded. |
| Case resist is useful in the study of "what". "why" and "how" questions because these deal with operational links | The type of data collected was "why", "wood" and "what" |
| The focus is on contemporary events | The use of knowledge management is a contemporary current concern and is to grow rapidly |

The significance of this detail is that the current study was done by measuring certain concepts and characteristics of a government organisation operating in a rapidly transforming public-sector environment because of the public-sector reform initiatives. This was to find out how it could improve OP and HSD without manipulating any aspects. It also took into account the implications of any suggestions for the use of KM for this purpose.

Flyvbjerg (2014) is of the view that the value of the case-study will depend on the validity claims that the researcher can place on the study and the status these claims obtain in dialogue with other validity claims in the discourse to which the study is a contribution. This means that the credibility of the research findings is dependent on their validity.

The validity of the research findings therefore depends on the strength of their practicality and the logical reasoning used in describing the results from the case-study and drawing conclusions from it (Miles, Huberman & Saldana, 2014). In the positivist tradition, the criteria commonly used for assessing the rigour of field research are reliability, internal validity, external validity and construct validity (Flyvbjerg, 2016). This implies that, when doing quantitative and/or qualitative research, the researcher should clearly explain all the processes and measures undertaken conclusive to meeting each of these criteria (Du Plessis & Majam, 2010).

#### 3.3.1.1. Validity and reliability criteria in case-study research

The validity of a study refers to the strength of the inferences or conclusions that are made from the research, that is, the degree of accuracy to which a study reflects the concept(s) that the research is measuring. The two questions asked by Leedy & Ormrod (2015) are whether the study has sufficient controls to ensure that the conclusions we have drawn are truly warranted by the data? Or, can we use what we have observed in the research situation to make generalisations about the world beyond that specific situation?

Researchers classify validity as internal or external (Yin, 2014). In the design of a study, the care taken to conduct measurements and decisions concerning what was and was not measured is its internal validity. Internal validity or ‘logical validity’ is the establishment of a cause-and-effect relationship that asks the question: “Did the experimental treatment make a difference in this specific experiment?” Internal validity in a case-study lays the emphasis on constructing an internally valid research process to establish a phenomenon in a credible way (Flyvbjerg, 2016). This, therefore, refers to whether the researcher could provide a plausible argument and logical reasoning that is powerful and compelling enough to defend the research conclusions.

Internal validity becomes especially relevant at the data analysis phase in a case study because that is where explanations and rival explanations are examined. The reason is that it determines the degree to which conclusions about causes of relations are likely to be true, in view of the operational measures used, the research setting and the whole research design.

The correct operational measure for the concepts being studied was the construct validity (Flyvbjerg, 2016) which is a type of internal validity. Construct validity establishes appropriate operational measures for the theoretical concepts being researched. This refers to the quality of the operationalisation of the theoretical concept (Flyvbjerg, 2016) through which the construct validity demonstrates the extent to which a study investigates what it claims to be investigating (Gibert *et al.,* 2008) or the instruments measure what is intended. The researcher, using case-study methodology would usually have close and direct contact with the organisation and people under observation, which makes the case-study more subjective from the researcher's point of view (Flyvbjerg, 2006). The researcher therefore had to refrain from subjective judgement during the period of research design and data collection to enhance the construct validity.

Graff (2014) suggests that construct validity refers to linking data collection questions and measures to research questions and propositions. While doing the research, the researcher had to be certain that the research instrument(s) in use are functioning as intended. Parmar, Shah, Thakkar, Al-Rejaie, Al-Assaf & Gandhi (2013), Colliver, Conlee and Verhulst (2012) and Teglasi, Nebbergall and Newman (2012) point out that construct validity refers to the stage where an instrument measures what it is intended (the construct). Yin (2014) proposed three remedies to establish this: using multiple sources of evidence, establishing a chain of evidence and having a draft case study report reviewed by key informants. In a case study, construct validity is particularly important at the data collection phase.

Another type of validity is external validity, that is, the possibility of applying the findings to other settings. It is the extent to which inferences about causal relationships can be made or generalised (Yin, 2014; Flyvbjerg, 2016). External validity or 'generalisation' asks the question: "To what populations, settings, treatment variables and

measurement variables can this effect be generalised?" It is concerned with the extrapolation of particular research findings beyond the immediate form of enquiry to other general settings (Flyvbjerg, 2016). Its importance is due to the fact that the same study should produce the same results if re-done, or if another individual uses the same method, even in a different healthcare department. Analytically generalising the results needs to be possible. An appropriate research design results in viable external validity of a study.

Du Plessis and Majam (2010) points out that criticism directed at external validity is towards the statistical and not the analytical generalisation. Analytical generalisation, which is the making of inferences from a particular set of results to some broader theory (Yin, 2014), is the basis of case studies. Peters (2014) and Basham, Jordan & Hoefer (2010) refer to criterion validity whose purpose is to determine the extent to which the instrument treats a criterion. They also include content validity as an important attribute of a research design. By this they mean how well the content of the instrument represents the universe of content that might be measured. Yin (2014) tabulates the case study tactics, matching them with the phase of research each is relevant to, in order to highlight the different types of validity that are essential in Table 10.

Table 10: Case Study design test

| Test | Case study tactics | Phase of Research in which tactic occurs |
|---|---|---|
| Construct Validity | Use multiple sources of information<br>Establish chain of evidence<br>Have key informant review deaft case<br>Do with case analysis, then cross-case pattern matching | Data Collection<br>Data Collection<br>researcher diary and report writing<br>Data analysis |
| Internal Validity | Do pattern matching<br>Do explnation building<br>Assure internal coherence of findings and concepts are systematially related<br>Use replication logic in multiple case studies | Data analysis<br>Data analysis<br>Data analysis<br>Research design |
| External Validity | Define scope and boundaries of reasobale analysical generalisation for the research.<br>Compare evidence with extensive literture<br>Give full account of theories and ideas<br>Ansure congruence between research issue and features od study design<br>Develop and refine case study protocol<br>Use multiple researchers | Research design<br>Research design<br>Research Design to Data Collectin<br>Research Desgn<br>Data Colection<br>Data Collectin |
| Reliability | Record observations andactions as concretely as possible<br>Use case study protocol<br>Record data, mechanically develop case study database<br>Assure meaningful parallellism o findings across multiple data sources<br>Use peer review/examination | Data Collection<br>Data Collection<br>Data Collection<br>Data Analysis<br>Data Analysis |

When the research procedure consistently gives the same results on repeated trials, it means it is reliable. According to Yin (2014), when the operations of a study can be repeated, such as the data collection procedures, producing the same result, that shows that it is reliable. Du Plessis and Majam (2010) discuss the importance of reliability which, in a case study, is achieved through the development of the “case study protocol” (Appendix H).

As an approach of estimating reliability, Peters (2014) and Basham *et al.* (2010) suggest internal consistency (a measure of the precision of the measuring instrument), pre-test (the use of individuals who are not part of the actual sample to test questions to ensure that their meanings are understood), test and retest (whether similar results are obtained when the same participants respond to the same test a second time).

A research procedure can be said to be reliable, credible, transferable, dependable and conformable if it has been fully tested and it constantly gives the same results on repeated trials (Flyvbjerg, 2016). A measure of reliability could be estimated by using the data collection instruments (questionnaire or interview) questions (Du Plessis & Majam, 2010) with individuals who are not part of the actual sample (pre-test) and determining whether similar results are obtained if the procedure is repeated (Peters, 2014; Basham *et al.,* 2010).

Finally, another issue reflected on in the implementation of the case-study method is the case-study protocol (Appendix H). A case-study protocol was developed to guide the case-study and increase the consistency of the study processes and the use of such a protocol could further strengthen the reliability of the study (Yin, 2014; Flyvbjerg, 2016). Flyvbjerg (2016) further maintain that the development of a formal case-study protocol provides the reliability required of all research. The case-study protocol gives an overview of the project, which is a useful way to communicate with the investigator, while the field procedures are indispensable during the data collection. The case-study questions are those under study, not those contained in the survey instrument (Yin, 2014). This is the situation in which the current target organisation (GDH) was analysed.

The expected results from the analysis of the target organisation are projected, the roles and responsibilities of the individuals involved in the process are examined and the objectives of the exercise are clarified. This, in essence, is how the KM case-study for this study materialised.

There are six listed sources of evidence for data collection in the case-study protocol: documentation, archival records, interviews, direct observation, participant observation and physical artefacts (Yin, 2014). However, Yin (2014) notes that not all of these are used in every case-study. This researcher uses documentation, interviews and questionnaire distribution. The protocol contains the instruments and procedures to be followed while the case-study is in progress.

### 3.3.2. Phenomology

One of the research strategies in qualitative research is phenomenology (Du Plessis & Majam, 2010). Phenomenology is a study of essence. Gill (2014) and Tuohy *et al.* (2013) explained that the concept of essence is operationalised in phenomenological research by means of phenomenological data analysis, which is the development of a narrative synthesis that captures the common core meaning of the research participants' experiences. This, the researcher did using the methodology of reduction, the analysis of specific statements and themes and a search for all the possible meanings (Creswell, 2014).

The phenomenological approach accords with what the interview sections described in this research. The various sections of the questionnaire and interviews asked exploratory questions, aiming to elicit a response that would explain the phenomenon in the analysis of the collected data. The results were reduced, themes were formed and meanings extracted from statements, thereby adhering to the phenomenological approach (Du Plessis & Majam, 2010).

### 3.3.3. Grounded theory

The aim of grounded theory is to use data to generate or discover theory; it is a process in which concepts, problems and theoretical codes are drawn from the data (Glaser,

2016). Its workability centres on the study of the phenomenon from the theory that is generated from data (Leedy & Ormrod, 2015). The formulation of that theory develops from the interaction that takes place between the data collection and data analysis stages (O'Reilly, Paper & Marx, 2012). These theories are context-specific and are grounded in data collected from the field.

During the qualitative data analysis, themes were generated from data and categories created, as well as conclusions drawn. Although "generating grounded theory involves an iterative process in which researchers cycle back and forth between generating theory and processing data, it aims to produce substantive theory" (Du Plessis & Majam, 2010: 452).

By using the formalised strategies advocated by grounded theory, the researcher can move beyond merely relying on criteria and strategies to enhance the quality of case-study research (Du Plessis & Majam, 2010). Although this does not represent the grounded theory approach as a whole, the generation of themes and categories from data represents a substantial aspect of the grounded theory approach. Consequently, this tilted the study towards the grounded theory approach.

### 3.3.4. The choice of methodological approach

As a tool in the critical, early phases of the application of a new KM theory, the case-study approach was considered the most appropriate. It was also considered for the accomplishment of this research task, because key variables and their relationships were being explored (Yin, 2014). Johnson & Onwuegbuzie (2009) argued that the development at the early stages of implementing the KM theory had ripple effects throughout the later stages, when relationships between the key variables were elaborated on and tested.

Case studies therefore represented a methodology that was ideally suited to this study because they were typically carried out in close interaction with practitioners and they deal, as it was the case of this study, with real OP and HSD situations (Yin, 2014) in the GDH. Furthermore, they explored in-depth experiences, searching for

explanations of why things happened in their natural setting, as well as constructing a description of the actors involved (Yin, 2014; Flyvbjerg, 2016).

Therefore, phenomenological approach was also incorporated because of the mixed-methods employed in accomplishing its objectives and the development of a narrative synthesis that captures the common core meaning of the research participants' experiences, with their inner consciousness based on memory, image and meaning.

### 3.3.5. Mixed-method approach

The research method followed was the concurrent mixed-methods approach (Figure 16). The mixed-methods approach entails combining or integrating quantitative and qualitative data (Fetters *et al.,* 2013) throughout the data collection, data analysis and interpretation stages of the research (Tashakkori & Teddlie, 2010a).

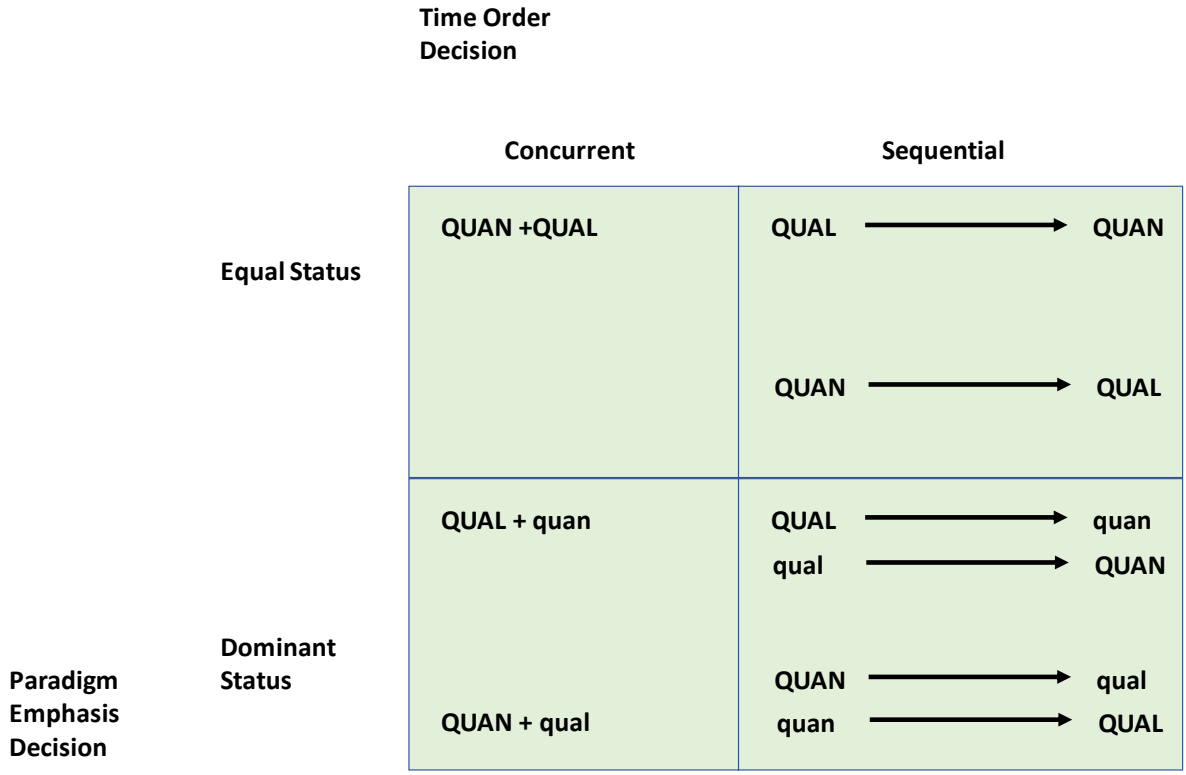



Figure 16: Mixed-method research design matrix

Source: Du Plessis and Majam (2010: 467)

As a method, it will use techniques for collecting, analysing and mixing both quantitative and qualitative data in a single research study (Neuman, 2014), using the philosophical assumptions that guide the whole process.

The researcher collected quantitative and qualitative data from the GDH departments, regional healthcare entities, statutory bodies and selected hospitals around Gauteng. It was expected that these data would verify:

- Employees' work knowledge and experience;
- The extent of automation and computerisation;
- The OS of the GDH;
- The corporate culture of the GDH; and
- KM, acquisition/creation, sharing/transfer, knowledge application/use and retention/storage

and the effect these had on the department's effectiveness, OP and HSD.

In this approach, the researcher collected and analysed data and drew inferences using both qualitative and quantitative approaches. The outcomes from the analysis of both were used to validate and test the reliability of each other's findings (Creswell, 2014; Tashakori & Teddlie, 2010). They also complemented each other in that insights that were not arrived at when using one of the methods were achieved by using the other. This validated the research finding by making it more credible and acceptable (Creswell, 2014).

The use of the GDH policy and strategy documents alone gives only one side of the story of the provincial department's operations. Even an in-depth exploration of a problem employing quantitative research of the problem might not provide enough data. Fetters *et al.* (2013) argue that, in such a situation, for instance, as in the case being investigated, where the detailed perspectives of the selected participants could help explain the quantitative results, the use of mixed-methods research becomes relevant.

The combination of both the quantitative and qualitative methods was used in understanding the case of the GDH and its OP and HSD in a public-sector reform environment. Comparison and contrast of the qualitative and quantitative outcomes created a more understandable picture of the phenomenon under investigation (Creswell, 2014).

The quantitative methods helped to understand the 'what' question, while qualitative methods aided understanding of the 'why' question (Trochim, 2016; Onwuegbuzie *et al.,* 2010; Maree, 2010). Their combination gave a wider picture and a deeper understanding of the need for KM and the role it plays in OP and HSD in the GDH.

When viewed from the angle of quantitative methods, combining both methods allow for generalisation based on the use of a representative sample (Gauteng Region A) that is taken from a population (the GDH and related regional healthcare entities) and interpreting the findings as more or less objective. Furthermore, the qualitative method is a rich in-depth appreciation of situations and phenomena; this accounts for its use in this study, as well as its use in refining and shaping the questions asked in the questionnaire so as to enable clearer understanding of the questionnaire.

The research design sought information and evidence from both the qualitative and quantitative methods that provided a compelling test for the research question. Throughout the entire research process, including the data collection phase, the researcher attempted to minimise errors and bias by ensuring that the research sample in both instances was representative and that the researcher would not influence the survey respondents' views.

The choice of the mixed-method approach as depicted in Figure 17 was informed by the fact that collections of statistics and number crunching through the quantitative methods approach do not always provide the answers that demonstrate an understanding of meanings, beliefs and experience, which are better understood through the qualitative method approach. This does yield understanding of meanings, experience, ideas, beliefs and values and other intangibles (Neuman, 2014).

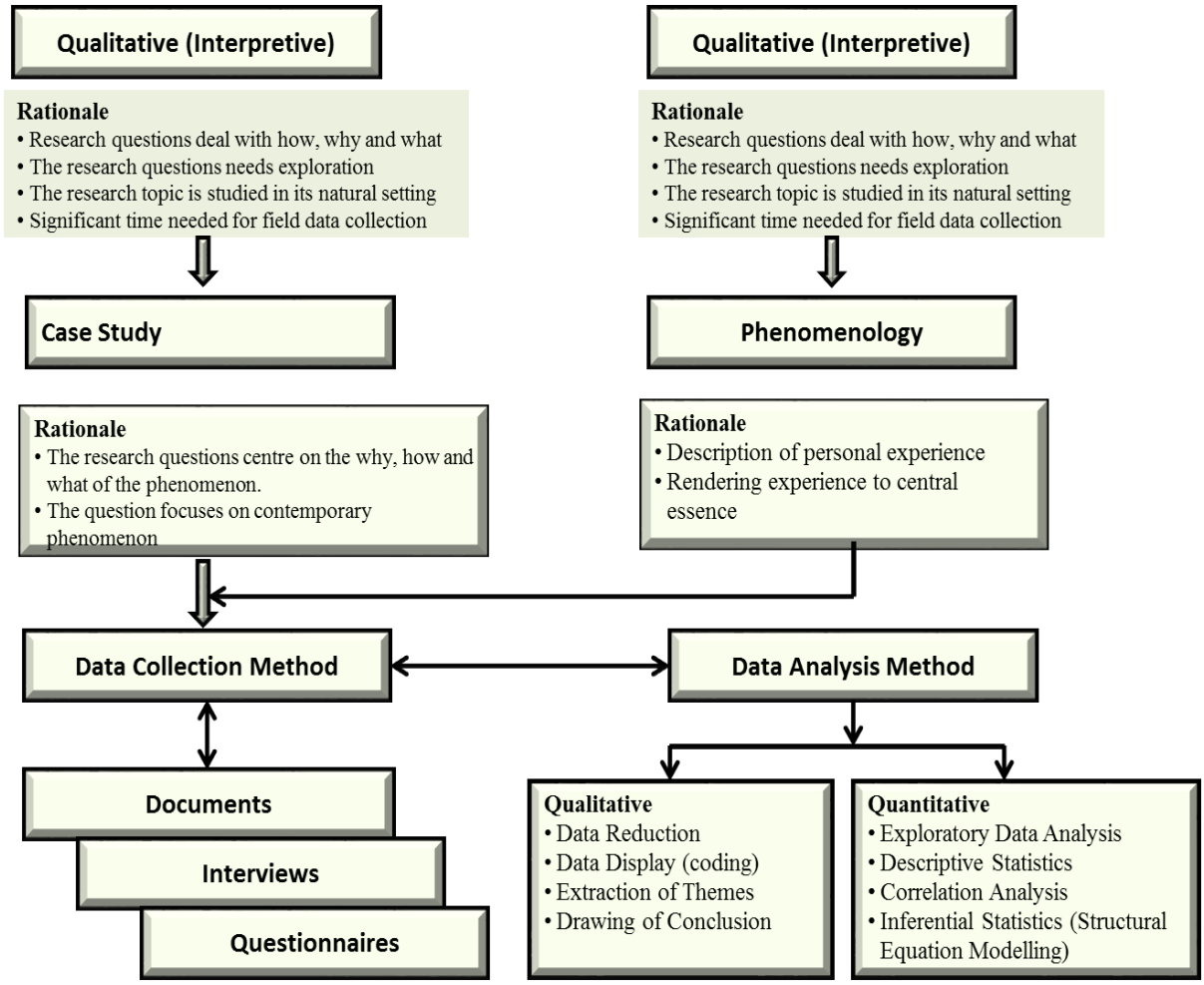



Figure 17: Research method approach for the study.

Source: Creswell and Plano-Clark, 2007

The mixed-methods approach in this research helped the researcher to gather statistical data about responses to questionnaires (quantitative) and back this up with more in-depth interviewing (qualitative) of selected members of the sample population. Since most of the questions asked in the questionnaire were closed-ended questions whose responses could not be elaborated on, it was found necessary to combine findings from the interviews with open-ended questions that allowed the survey respondents to respond and to do so with more informality, accordingly introducing a blend of exhaustive narrative elaboration (Czarniawska, 2006).

Finally, the mixed-method applied in this study, as alluded to earlier, is the parallel or concurrent mixed-method, which is mainly for the purpose of completeness and

provides far more understanding of the study than its qualitative and qualitative analysis could accomplish on its own (Creswell, 2014). A parallel or concurrent method Figure 18, defined by Onwuegbuzie and Collins (2007), who use samples for the qualitative and quantitative components drawn from the same underlying population but the questionnaire participants are not the same as those who are interviewed.

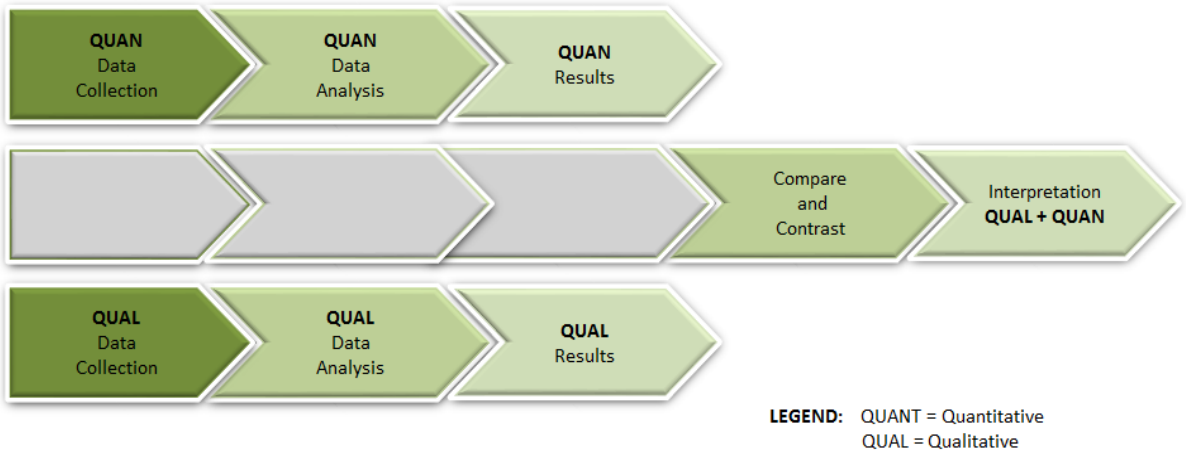



Figure 18: Triangulation: converging quantitative and qualitative data model
Source: Creswell (2014)

### 3.3.5.1. Parallel/concurrent mixed design

A parallel/concurrent mixed design (Figure 18) is one in which there are at least two strands (Denzin, 2012), one with qualitative questions and data collection and analysis techniques and the other with quantitative questions and data collection and analysis techniques (Denzin, 2012).

The strands of a study occur in a synchronous manner. The data are collected simultaneously and analysis is performed independently in each strand, although one might also influence the other. Inferences made on the basis of the results from each strand are integrated to form meta-inferences at the end of the study (Du Plessis & Majam, 2010; Bryman & Bell, 2015; Johnstone, 2004).

Equally important is that the researcher applied the triangulation approach in order to look for common themes that appear in the data for both methods (Denzin, 2012) and where qualitative and quantitative methods are combined to study the same

phenomenon, in order to gain convergence and increase validity (Du Plessis & Majam, 2010; Onwuegbuzie *et al.,* 2010).

Thus, it was critical that the researcher should keep in mind the need to check the consistency of the findings generated by different collection methods, using multiple analyses to review findings and using multiple perspectives to interpret data.

#### 3.3.5.2. Validity in mixed-methods research methodology

In the practice of mixed-methods research, data collection also involves both numeric information (for example, on instruments) as well as text information (for example, on interviews) so that the final database represents both qualitative and quantitative information (Creswell, 2014). Creswell (2014) and Fetters *et al.* (2013) posited that the applicability of the mixed-methods approach generally involves the concurrent but separate, collection and analysis of quantitative and qualitative data so that the researcher may best understand the research problem. Thus, the corroboration of results from the different methods validates the approach and makes the results complementary to each other.

Instead of validity, Tashakkori and Teddlie (2010b) suppose the term inference quality is more suited to mean mixed research validity. Inference quality refers to design quality and interpretive rigour of the research. They see this as the extent to which a study adheres to best practice and interpretive rigour. Onwuegbuzie *et al.* (2010) suggest that design quality refers to the standards used for the evaluation of the methodological rigor of the mixed research study, whereas interpretive rigor pertains to the standards for evaluating the validity of conclusions.

According to Kern (2016), Morse and Cheek (2015) and Zohrabi (2013), the concept of validity has yet to be delineated for mixed-methods research. The suggestions by Tashakkori and Teddlie (2010b) and Onwuegbuzie *et al.* (2010) seem to be variations in the naming of concepts. However, the enhancement of validity, in addition to the careful weighing of the evidence obtained, is determined by the appropriateness, thoroughness and effectiveness that a research method used.

## 3.4. Research design

Research design refers to the strategy for conducting the research (Neuman, 2014), which involves determining how the mixed-methods approach chosen for this study will be applied to answer the research question. It is a master plan for the research that gives details of which questions to study, which data is relevant, which data to collect and how to analyse the results (Creswell, 2014; Fetters *et al.,* 2013. Therefore, the design chosen included the research question, the research objectives, sampling procedure, the methodologies and data collection and analysis (Creswell, 2014).

### 3.4.1. Research question

As described in Chapter One and based on the context and purpose of the research study, the primary research questions addressed by this study are:

- What is the level of understanding of KM in the GDH and related healthcare facilities?
- How are KM strategies and practices aligned with the GDH strategies and operational objectives?
- How is KM used by the employees in the GDH?
- How could the results of the literature review and the empirical data be used to create a knowledge-management culture for the GDH?

The primary research question to be answered here was that of establishing how the GDH could use KM to improve OP and HSD. The research question reflects the problem that the researcher wanted to investigate (Neuman, 2014) and is based on the practical need to transform a working environment to improve OP and HSD.

A research question provides a framework for conducting the study (Onwuegbuzie *et al.,* 2010) and it occupies a central, interactive, emergent and evolving place, particularly in the mixed-methods research process, as can be seen in Figure 17 in Section 3.1 of page 137. As illustrated in Figure 15, the research question is developed and re-evaluated in the data analysis, data validation and data interpretation steps,

which in turn might lead to the formulation of the research goals, objectives and rationale (Onwuegbuzie *et al.,* 2010).

Thus, the research questions provided the rationale for mixing the quantitative and qualitative approaches (Du Plessis & Majam, 2010), which necessitates that data for both data be collected and analysed concurrently (Onwuegbuzie *et al.,* 2010).

### 3.4.2. Sampling procedures

This section describes the techniques that were employed on arriving at the sample and sample size used for the interview and survey, as well as the processes before the actual selection. Sampling involves selecting individual units to measure from a larger population (Palinkas, Horwitz, Green, Wisdom, Duan & Hoagwood, 2013). Sampling procedures therefore involve the definition of sampling techniques, the population, instrumentation and procedures used to obtain the data (Angell & Townsend, 2011). Thus, the qualitative and quantitative approach will require different sampling methods.

#### 3.4.2.1. Population definition

The target population was all the permanent or contract employees in the GDH and regional healthcare entities (GDH, 2014; GDH, 2013; GDHSD, 2009). These entities consist jointly of approximately twenty-five thousand employees. There are 20 hospitals, 392 fixed clinics and 296 satellite/mobile clinics in Gauteng under the control of the GDH. Its annual budget allocation is R36bn. The sampling frame used in this study was based on the information provided by the GDH Annual Report (2013).

Over and above the statistics provided above, Gauteng was chosen as an optimum population for this study because it is the trendsetter in terms of healthcare sophistication and advancement throughout the country. It is also the hardest hit in terms of access to healthcare services. Equally serious was the near collapse of administrative and management capabilities to manage the HS which caused the GDH to be put under the administration of the National Treasury (Jupp, Maynard, Howell, Poll & Whitfield, 2012).

### 3.4.2.2. Sample frame

A sampling frame is an operational definition of the target population from which the sample was drawn and to which the sample data was generalised (Palinkas *et al.,* 2013). It was a list of all the elements in the population of interest at the GDH, namely the departments, telephone extensions, e-mail addresses and employee records that could be uniquely identified. For the stratified random sample, the researcher first divided all the population elements of the GDH into categories (blue-collar and white-collar workers) and then drew independent, random samples from the white-collar workers category (Palinkas *et al.,* 2013). The blue-collar occupational classification refers to workers who perform labour jobs and typically work with their hands at the GDH and its PHC facilities. Some blue-collar occupations in the GDH's PHC require highly skilled personnel who are formally trained and certified, for example hospital equipment technicians, plumbers, electricians and structural workers. The blue-collar workers are mostly not office bound and do not necessarily have desktops/laptops and have no access to work email facilities.

Whereas, the white-collar occupational classification workers usually perform administrative jobs or jobs in an office setting, managers and healthcare professionals (medical doctors and nurses). These are, indeed, highly skilled and formally trained professionals. The GDH white-collar workers provide professional services to internal and/or external GDH clients. The blue-collar workers have allocated desktops and laptops and have access to GDH information technology infrastructure including emails.

The selection of participants was therefore from the white-collar category of GDH employees.

### 3.4.2.3. Unit of data analysis

The GDH is a unit of analysis in this study as it is the major entity that is being analysed. It is the 'what' or 'who' that is being studied (Neuman, 2014. Therefore, the single unit of analysis in the study is the group (GDH) even though the researcher had data at the employee level, we use aggregates in the analysis. Salkind (2012) posited

that in many areas of social research the unit of analysis has become particularly important where, in this case, we compare OP and HSD but collected data at the individual employee level.

#### 3.4.2.4. Sample size

Because it was almost impossible to make direct observations on every individual in the population, the researcher collected data from a sub-set of the population – a sample – and used those observations to make inferences about the entire population (Onwuegbuzie & Collins, 2007). The size of the sample used in the study was dependent on the total number of people that should be represented by the data collected. The sample size should therefore be informed by the research objective, research question and research design. The sample normally corresponds to the larger population on the characteristic(s) of interest where the researcher's conclusions from the sample are probably applicable to the entire population (Zikmund *et al.,* 2013).

In this study, the use of a questionnaire required survey type sample size calculation, meaning that a sample error formula was used. In determining the sample size, the researcher was of the view that a larger sample can yield more accurate results — contrariwise, a larger sample which could yield excessive responses can be pricey. Thus, a consequential research requires an understanding of the statistics that drive sample size decisions. Jung (2014) point out that one misconception about sample size is that a sample must include some minimum proportion of the population. This implies that if the size of the population is larger, the sample size must be increased by a corresponding amount. This is not the case.

In fact, the main factors that determine the sample size are the desired degree of accuracy and the confidence level. A simple equation was used to calculate a sample size. This calculation took into consideration few characteristics about the target population and the sample needed:

- Population size: The study was looking only at white-collar workers in region A and this number came to 15 000.

- Margin of error (confidence interval): The confidence interval allowed the determination of much higher or lower the population mean sample can fall (margin of error of +/- 5%).

- Confidence level: The most common confidence intervals are 90% confident, 95% confident and 99% confident.

- Standard of deviation: The safe decision is to use .5 sampling error– this is the most forgiving number and ensures that the sample will be large enough.

The decision in selecting the random sample for quantitative data collection was therefore to have a confidence level of 99% and a 50% (.50) sampling error, because the statistical phenomena that emerged from the research were not an end in themselves but a part of results to be compared with those from other data collection methods. The confidence level corresponds to a Z-score. This is a constant value needed for this equation to calculate the sample. The most common confidence levels for the z-scores obtained from the Z-score table are:

- 90% – Z Score = 1.645
- 95% – Z Score = 1.96
- 99% – Z Score = 2.576

The Z-score (2.576), standard of deviation (.5) and confidence interval (.05) used in the following equation:

Sample size = (Z-score)2 * StdDev*(1-StdDev) / (margin of error)2,
((2.576)2 x .5(.5)) / (.05)2 = 663.5

The result was a sample of 500 individuals calculated with the use of the simple formula above. The figure of 663.5 was rounded down to 500. Therefore, the reasonable sample size for this study was 500 employees selected from the GDH, regional PHC's, hospitals and clinics. This stratified purposeful sampling was compiled from the entire population, based on the employees' age, gender, department, years

of service and position in the company (Bryman & Bell, 2015; Cooper & Schindler, 2014). The employee population of this sample ranged from inexperienced workers, administrators, middle managers and senior managers to highly experienced executive managers and health professionals. The sample design took into account the nature of the organisation's population and sample frame.

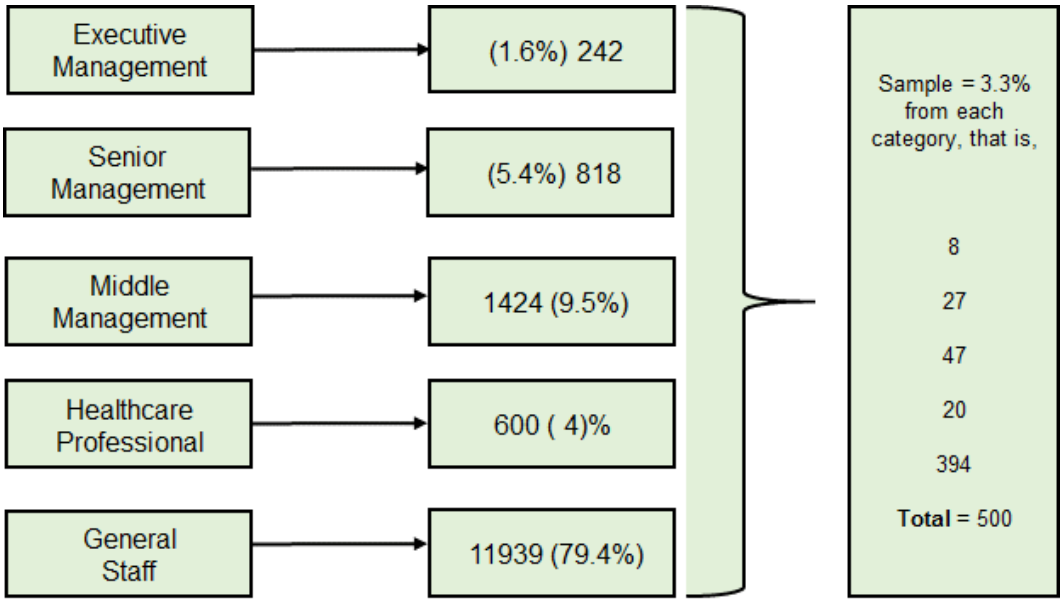



Figure 19: Stratified random sample size calculations

The 500 employees constituted 3.3% of the total white-collar population of GDH. To have representative samples to understand the characteristics and responses from the different groups, the same percentage was used to apply to all population groups in the sample frame (Administrative staff and healthcare professionals). This means that with 3.3% of 2 484 management, 3.3% of 11 939 General staff and 3.3% of 600 healthcare professionals, the 3.3% representation of 500 is arrived at as illustrated in Figure 19.

While statistical representativeness is not an important consideration in qualitative research (Roy, Zvonkovic, Goldberg, Sharp & Larossa, 2015), it is an important element in quantitative research because of the standardised nature of the quantitative process and the visibility of the procedures used (Creswell, 2014; Stafford, 2011). To collect qualitative data from interviews, purposive sampling was used with 25 participants for interviewing. In this study, the researcher contends that 5 participants

as interview candidates can give insightful information. These were selected from the already delineated sample and perceived by the researcher to be key individuals who would give invaluable insight and more detailed answers to the research questions.

In this research, the biggest group was the general staff members, followed by middle management, healthcare professionals and executive management. The employees included administrative and healthcare professional categories. The differences in the size of samples used in collecting qualitative and quantitative data for the mixed-methods research were based on the suggestion made by (Creswell, 2014) that the size of the quantitative sample, preferably randomly selected, will not be the same size as the smaller, preferably purposefully selected qualitative sample.

### 3.4.3. Rationale for selection of research site

Gauteng is the most populous province in South Africa and the one currently receiving the most negative publicity - with the national focus on the Gauteng provincial DoH and its institutions, clinics, hospitals, nursing colleges, forensic pathology services and oral and dental institutions.

The GDH is one of the largest provincial departments in the province. The homogeneity in the unified structure of procedures and rules in the GDH vocabulary allows any study carried out in whatever provincial healthcare department in the country to qualify as representative of the South African HS. The only proviso is that the sample size to be employed has to consider demography if it is to be truly representative.

In this regard, Gauteng Region A was selected as the site for conducting this research. Furthermore, the researcher considered the vastness of the Gauteng province and the possibility of drawing data from the whole province as extremely time-consuming and cost-intensive and therefore settled for Region A.

### 3.4.4. Method of data collection

A method of collecting qualitative data or quantitative data is simply a technique that a researcher uses to obtain information (Palinkas *et al.,* 2015). The techniques that were used in this study to collect data are questionnaires, interviews, primary and secondary data in intra-method mixing. Intra-method mixing is defined by Graff (2014) as the concurrent or sequential use of a single method that includes both qualitative and quantitative components. In this method, the mixed-methods researcher use strategies that are the same as those used by researchers engaged only in quantitative research and by those engaged only in qualitative research (Graff, 2014). This study used concurrent intra-method mixing using open- and closed-ended questions in a questionnaire and in interviews.

The researcher carried out the interviews according to the responses to the questionnaires. The aim of this action was to identify contextually relevant KM factors that influence both the improvement of OP and HSD in the GDH.

Concurrent mixed-method data collection strategies have been used to validate one form of data with another form and to transform the data for comparison. This design, according to Maree (2010) was employed here to collect and evaluate the understanding of KM among GDH employees and its use for the improvement of OP and HSD. The research questions involved levels of familiarity and agreement with various KM principles.

The number and variety of survey respondents challenged pre-testing of the survey items. For this reason, the researcher chose to employ a concurrent mixed-methods research design involving a web-based questionnaire to collect both structured and unstructured data. Each topic-specific set of structured questions in the survey instrument was followed by at least one open-ended and unlimited comment field, which was explicitly linked to the question immediately preceding it.

Driscoll, Salib, Rupert, Appiah-Yeboah, Salib & Rupert (2007) argue that this data collection strategy for mixed-methods applications has several advantages. First, it can be fairly intuitive as far as the participants are concerned. The web-based format

was easy to understand, particularly with the closed-ended questions and the unlimited open-ended response fields, so many survey respondents took advantage of the resource to post extensive comments. These fields were also overtly linked to the preceding structured responses, facilitating linkage by the researcher when relating the structured and unstructured responses (Driscoll *et al.,* 2007).

### 3.4.5. Quantitative method approach for data collection

The purpose of the quantitative method approach was to enable the objective process to project findings to a larger population (Creswell, 2014; Fetters *et al.,* 2013). Because of its systematic nature and objectivity in using numerical data from a population sample, the quantitative approach allowed for inferences or generalisations (du Plessis & Majam, 2010; Flyvbjerg, 2016). These inferences allowed the researcher to determine the probability that the findings on the sample could be found in the population (Neuman, 2014).

The quantitative method of research used standardised measures and statistical techniques for measuring collected data and measured variables with some precision, using numerical scales (Creswell, 2014).

The mechanisms employed to collect quantitative data involved the use of structured and unstructured questions with a large number of survey respondents. The quantitative method considers numbers, measurements and statistics when outlining the key variables for the collection, analysis and interpretation of data (Maree, 2010). The measurements and techniques used to analyse the collected data must be objective and statistically valid (Creswell, 2014; Bryman & Bell, 2015).

A quantitative research approach (survey method) which involved human behaviour, using a survey or questionnaires (Neuman, 2014) was deemed to be the most appropriate for complementing the qualitative approach.

The survey method is a cost-effective approach and was agreed to and accepted by the organisation in which the survey was to be conducted, in terms of the feasible given time, resources and organisational constraints (Neuman, 2014). The

quantitative data collected in the survey process enabled the researcher to measure the extent to which certain KM processes, management practices and organisational and behavioural factors influence OP and HSD in an organisation. Further, quantitative data was used to conduct multivariate statistics as an attempt to develop a new model based on the empirical results, which compared with the theoretical model.

The purpose of the quantitative approach in this research was to operationalise the constructs described in the theoretical model by compiling a questionnaire and diagnosing the degree to which OP and healthcare service can be improved in an organisation. The specific aims of the approach were to:

- Determine statistically the enhancing or impeding KM factors and organisational factors that influence knowledge OP and HSD
- Compile an SEM to verify the theoretical model and determine whether any new constructs would emerge

The ultimate aim was to develop a knowledge-based OP and service delivery model that could be used in organisations to determine the possibility of implementing KM and whether its application would improve OP and HSD.

Data collected according to the quantitative approach would be used to measure several variables and the use of KM as the strongest contributor and acts as a driving force for OP and HSD.

#### 3.4.5.1. Probability sampling technique in quantitative methods

A probability sampling technique is a technique of sampling that employs some form of random selection to ensure that different units in the population have an equal chance or probability of being chosen (Du Plessis & Majam, 2010). This researcher regards probability sampling as ideal for this research, which is guided by a positivist research paradigm and a quantitative research design method.

For the quantitative data, the group of sampling units on which the measurements are made was drawn from the research population and was relevant to the research question. The selection of the sample was based on a stratified random sampling technique to ensure that each unit in a stratified sampling frame had an equal chance of being selected (Trochim, 2016). This meant that each element in the stratified random sample had a known non-zero probability of being selected (Maree, 2010).

Seven steps followed in creating a stratified random sample (Figure 20):

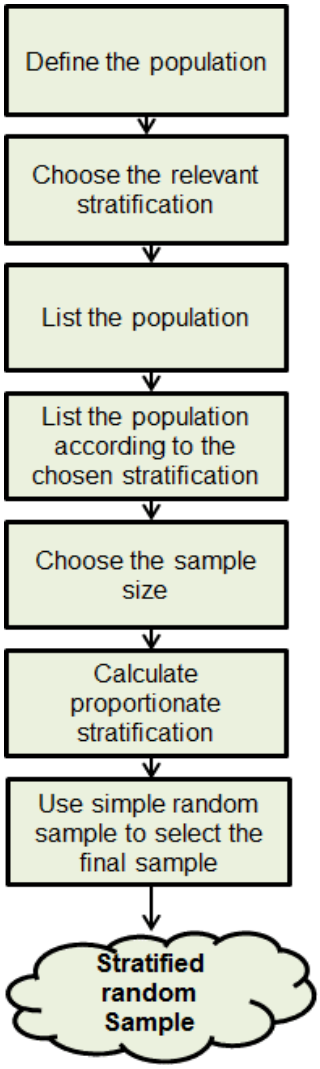



Figure 20: Steps in creating a stratified sample

1. First define the population
2. Next state the relevant stratification
3. Then identify or list the units in the population

4. List the population according to the chosen stratification
5. Choose the sample size
6. Calculate a proportionate stratification and
7. Make the random selection of the stratified sample.

The probability or stratified random sampling for a quantitative approach and non-probability sampling for a qualitative approach was used (Neuman, 2014). By using the probability sampling method, the researcher ensured that the samples used as alluded to in Section 3.4 were objective and representative. The population sampling applied careful stratification and randomisation at the organisational level (GDH, regional healthcare entities and the respondent) to ensure data accuracy (validity) (Palinkas *et al.,* 2013) and data consistency (reliability) (Du Plessis & Majam, 2010).

#### 3.4.5.2. Survey respondents in quantitative methods

The targeted population for this research was the same as the sample frame, namely all the white-collar permanent and contract employees, male and female, irrespective of age, who are employed in the GDH, selected hospitals in Gauteng and public entities operating in the Gauteng region A, who have been employed in these areas between 1994 and the present time.

Conclusions were drawn from this group of people. Selecting a group from the larger population for measurement required this group to be representative of the population to ensure that the findings could be generalised to the population as a whole (Neuman, 2014).

The larger population of the study is estimated at 25 000 employees in the GDH in Gauteng. Sampling used was based on the availability of information from both the secondary and primary sources used; ‘secondary data’ refers to the data that was available in published literature, while the term ‘primary data’ refers to the data obtained from the original sources (Zikmund *et al.,* 2013).

The collection of primary data was deemed necessary because there might not have been sufficient or accessible secondary data available on the topic under investigation.

The secondary data included annual performance reports, financial reports, the GDH annual reports and performance management statistics for the period from April 2007 to March 2016. The sample size was determined by the availability of different survey respondents in the form of employees and management in the different departments of the GDH and its related regional healthcare entities.

#### 3.4.5.3. Questionnaire design in quantitative methods

The quantitative approach involves the administration of a questionnaire to a sample of survey respondents (Babbie, 2015). Babbie (2015) went further to describe this approach as a systematic process of data collection to quantitatively measure specific aspects of organisational members' experience as they relate to work. The strengths of a survey are high measurement reliability if the questionnaire construction is carried out properly and high construct validity if proper controls are implemented. The purpose of the questionnaire designed for this study was to explore the GDH employees' attitudes and behaviours in their day-to-day work experience of KM.

As the terms questionnaire and survey are often used interchangeably, it is important to point out the difference between them. A survey is defined as a group of research methods used to determine the status of a phenomenon under study, whereas a questionnaire is a data collection tool (Yin, 2014). While a survey considers something in a very broad way in a sample population by asking questions about aspects of people's lives, a questionnaire is a set of questions used to gather information by means of a survey (Yin, 2014). A questionnaire was used in the present case.

Investigating the hypothesis requires a quantitative research data collection approach (Graff, 2014). The principal approach for quantitative data collection would be the use of questionnaires. The measurement process for the quantitative approach follows the sequential steps of first conceptualising, then operationalising, followed by measuring. Conceptualisation is the process whereby the meanings that will be understood for particular terms are specified (Babbie, 2015). Conceptualisation in this study was achieved by developing a theoretical model based on a literature study on the concept of KM and organisational factors that would bring about an improvement in OP and HSD.

A questionnaire was used also to measure the variable(s), characteristic(s), or information of interest to the researcher (Rao, 2012). The questionnaire designed was made up of closed- and open-ended questions. The questionnaire was distributed electronically to all the participants at all levels in the targeted areas. This was aimed at ensuring that a maximum number of participants would receive the questionnaire and participate in the study. It would ensure the validity of the data (Onwuegbuzie *et al.,* 2010).

The questions in the questionnaire were aimed at determining the GDH employees' awareness (Rao, 2012) of knowledge process capabilities (KPC) and OC. OS, information technology, whether there are policies in existence at the GDH and whether the use of such policies could improve OP and HSD were also considered, amongst others. The questionnaire in this study (Appendix F) was organised into six sections: socio-economic demographics, levels of understanding of KM, KM strategies and operational objectives, practice of KM in the department, KM principles and OP. This included a cover letter outlining and introducing the study and its aim and purposes (Kumar, 2005). The questionnaire further explained to the participants how the questionnaire is structured and on what it is based (Rao, 2012; Graff, 2014).

- Section A: biographical questions about the participants' background, which includes their gender, age, race, positions, length of time at the GDH, length of time in their position and their academic qualifications.
  10 questions.

- Section B: the levels of understanding of KM.
  9 questions.

- Section C: KM strategies and operational objectives, the existence of KM strategies, policies, plans, programs and training.
  19 questions.

- Section D: the use of KM in the department. 21 questions

- Section E: the principles of KM, knowledge creation/acquisition, sharing/transfer, storage/retention and application/use. 89 questions.

- Section F: measurements of OP, HSD, OC, OS and information technology. 61 questions.

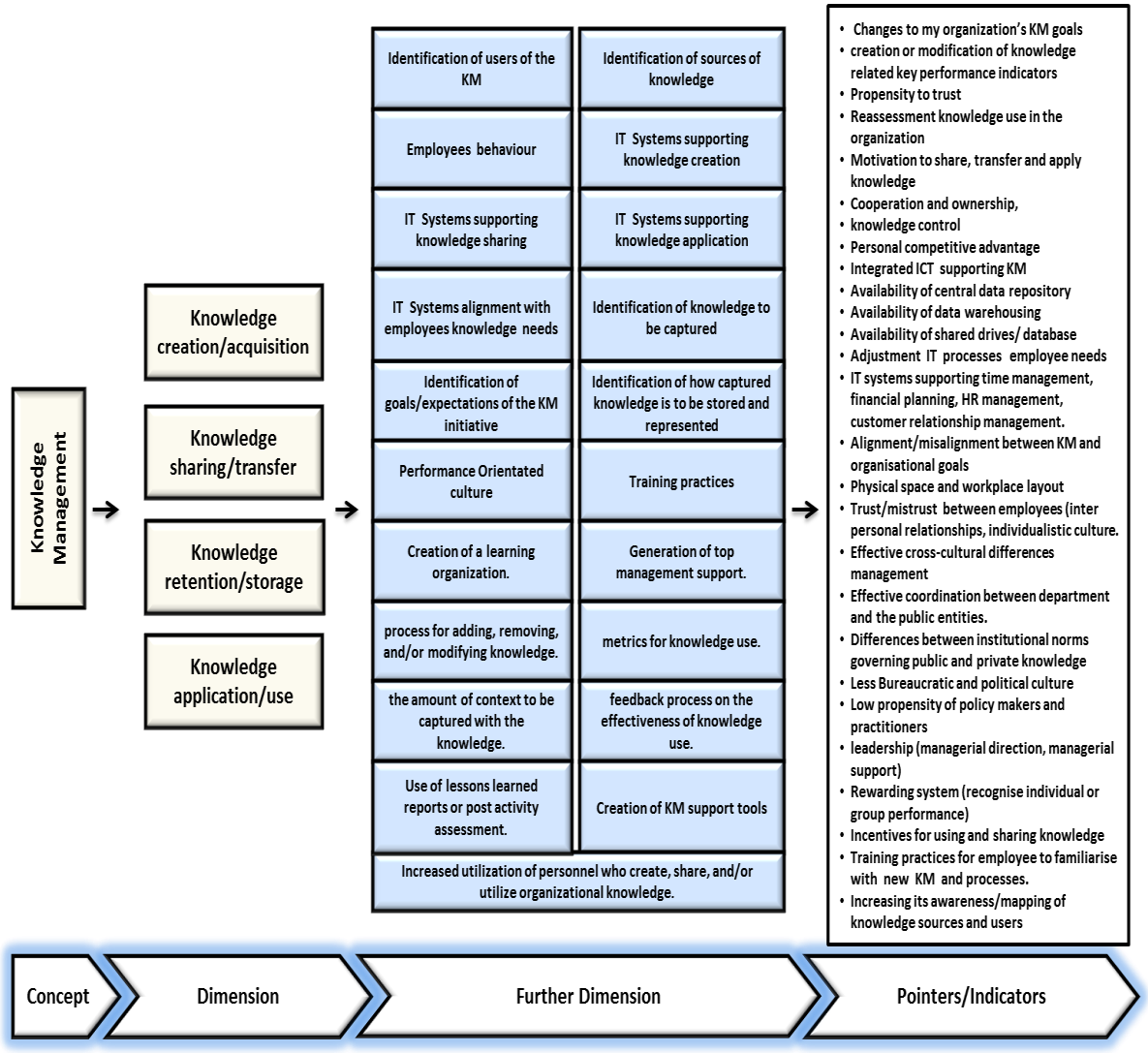



Figure 21: Dimensionalising knowledge process capability

This necessitated the operationalisation of these questionnaire concepts into observable and measurable variables (Bryman & Bell, 2015). These measures were used to dimensionalise (Onwuegbuzie & Combs, 2011) the concepts and arrive at the indicators of knowledge infrastructure capabilities (information technology, OS and OC), knowledge process capabilities, OP and HSD in testing the hypothesis in this

study. Figure 21, Figure 22, Figure 23, Figure 24, Figure 25 and Figure 26 give a detailed picture of the dimensionalisation undertaken.

The dimensionality of knowledge process capability concept (Figure 21) is the number of separate and interesting sources of variation among the concept itself. The dimensionalisation merely simplifies the characteristics of this concept, in order to make it more comprehensible for analytic purposes (Tariq & Woodman, 2013; Onwuegbuzie & Combs, 2011).

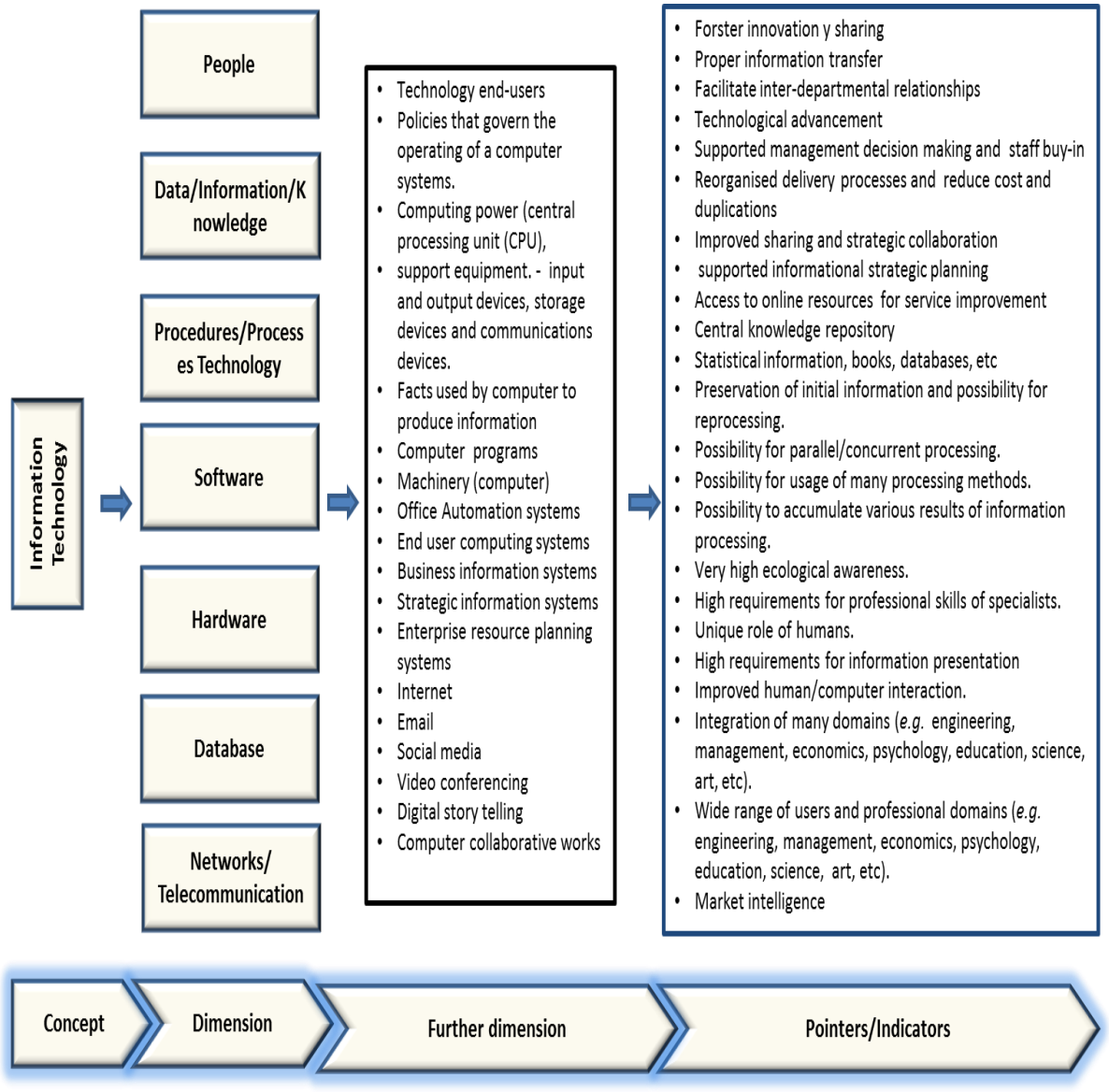



Figure 22: Dimensionalising information technology

In some cases, the nature of the characteristics is immediately obvious; in other cases, it may be less so. The second level dimensioning of knowledge process capability concept resulted in further KPC dimensions. Further dimensionalisation of KPC resulted in unit concepts or variables that are comprehensible and measurable and they each have pointers or indicators that form questions in the questionnaire.

The same dimensionalisation process for information technology concept (Figure 22) was followed. The result was the sub-concepts people, information/data/knowledge, software, hardware, database and networks/telecommunications. Further dimensionalisation resulted in measurable unit concepts which were used to build the questionnaire.

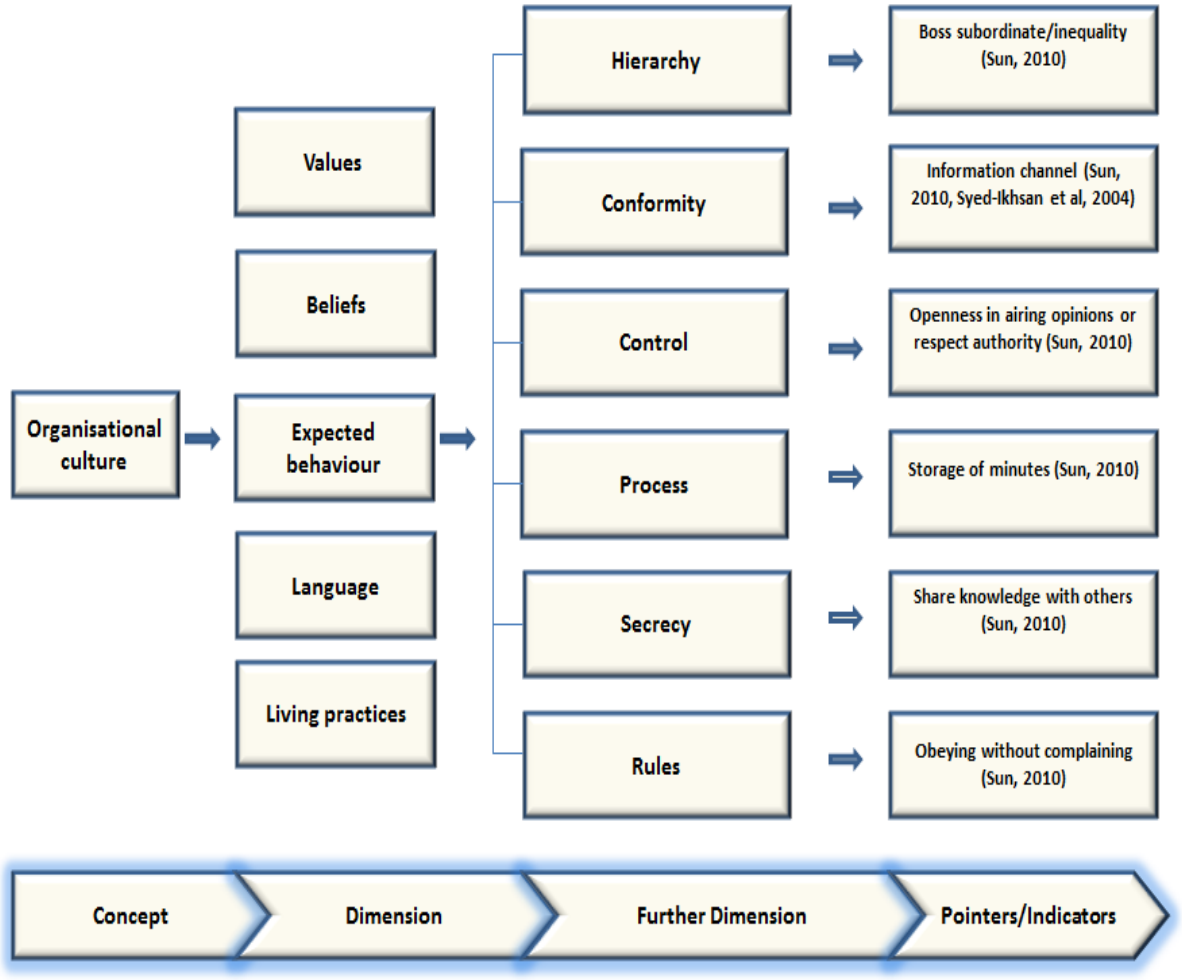



Figure 23: Dimensionalising OC

The same dimensionalisation process was also followed for OC concept (Figure 23). The results were values, beliefs, expected behaviour, language and living practice. Further dimesionalisation resulted in hierarchy, conformity, control, process, secrecy and rules. Finally, measurable units were derived from these to use in the questionnaire.

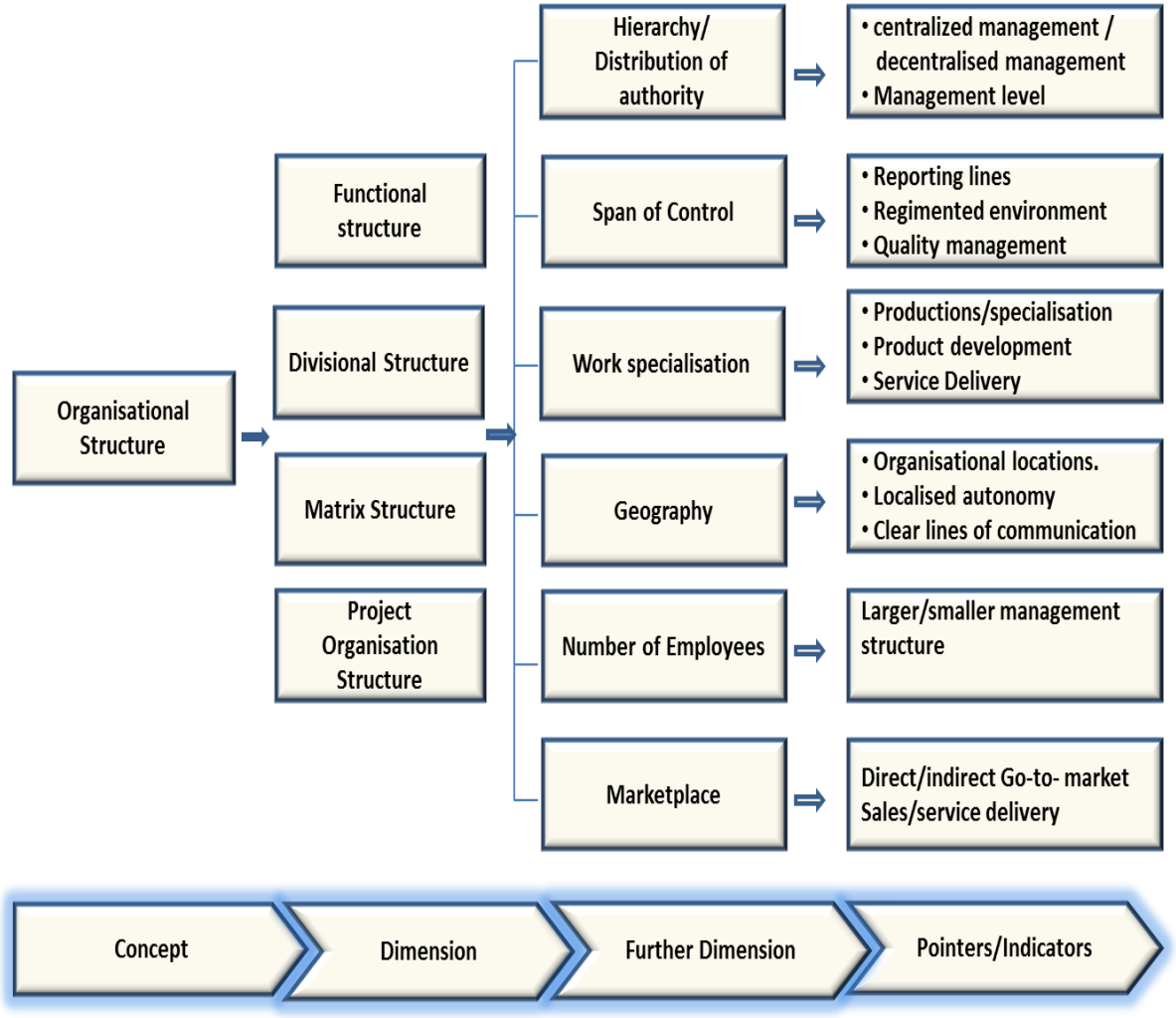



Figure 24: Dimensionalising OS

The dimensionalisation process was also followed for the OS concept (Figure 24). The results were functional structure, divisional structure, matrix structure and project OS. These were further dimensionalised into hierarchy/distribution of control, span of control, work specialisation, geography, number of employees and marketplace. The process ended with measurable units which were include in the questionnaire.

The dimensionalisation process for OP concept (Figure 25) had only a one-level dimension with high management quality, high workforce quality, long term orientation, continuous improvement, openness and action sub-concepts. There was no further dimensionalisation but possessed measurable units which were also used in the questionnaire.

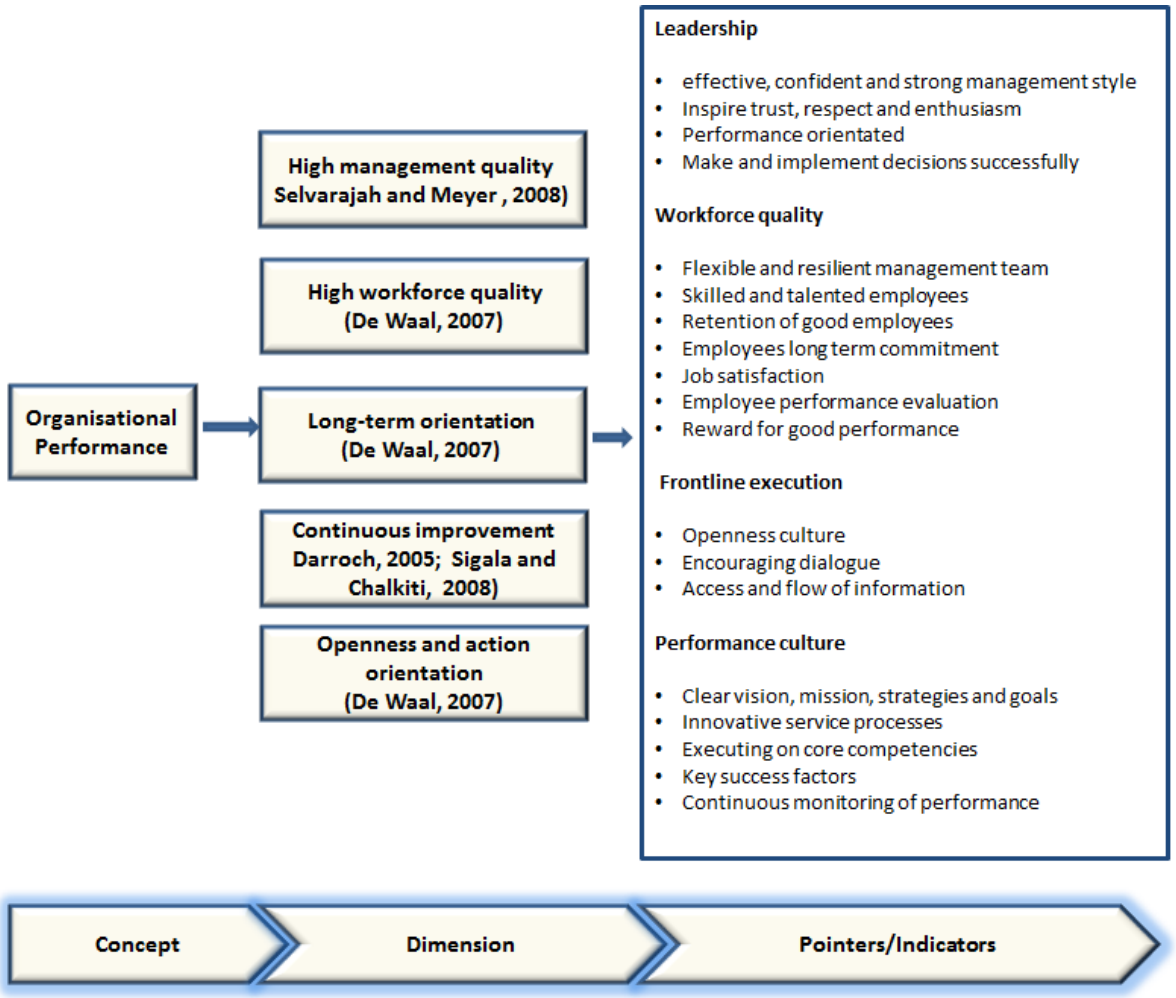



Figure 25: Dimensionalising OP

Finally, the dimensionalisation process ended with the process for HSD concept (Figure 26) had only one-level dimension with people, knowledge and information technology sub-concepts. There was no further dimensionalisation but possessed measurable units which were used in the questionnaire.

In Chapter Two, it was identified that mapping the ideas, concepts and arguments drawn from the literature are the most important aspect of the literature review (Jaidka,

2013). It is useful to define the independent and dependent variables as derived from the dimensionalisation process described above.

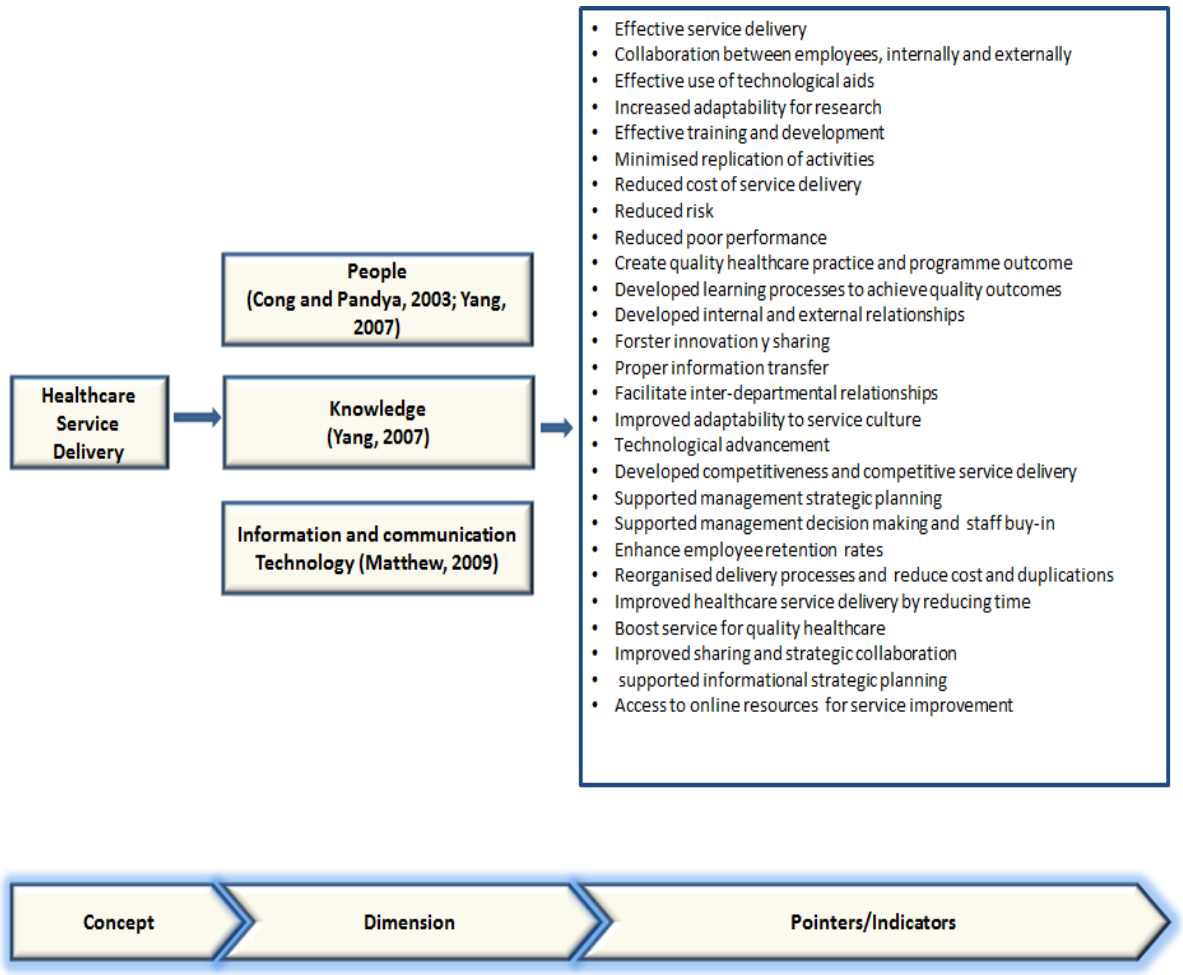



Figure 26: Dimensionalising HSD

This, as argued by (Jaidka, 2013), will assist the researcher in positioning and describing how a set of independent variables affects dependent variables and showing that there is a relationship between these variables.

Convincing research requires an awareness of other acceptable events that can be explained and controlled by collecting the control variable as well as the variables that are of interest. The questions contained in the questionnaires were closed questions requiring the survey respondents to choose one of the alternative answers provided.

The choice of questions was arrived at after careful consideration of the sample group (GDH employees across all the levels). The question content comprised

demographics, understanding management, knowledge infrastructure capability, knowledge process capability, HSD and the method of administration (web-based).

Most of the 209 questions offered the participants a choice of five answers:

- Strongly agree; agree; neutral; disagree; strongly disagree, or
- Very good; good; average; poor; very poor, or
- Very effective; effective; no opinion; somewhat effective; not effective, or
- Never; rarely; neutral; often; always, or
- Very often; sometimes; no opinion; rarely, never

Only one answer can be chosen. Most of the questions cover the concept of KM capability.

The five-point Likert scale, ranging from:

- 1 (strongly agree) to 5 (strongly disagree), or
- 1 (very good) to 5 (very poor), or
- 1 (very effective) to 5 (not effective), or
- 1 (never) to 5 (always), or
- 1 (very often) to 5 (never), or
- 1 (crucial very important) or 5 (not important at all).

1 (to a very great extent) or 5 (not at all) was used in the items of the questionnaire.

The options of neither agree nor disagree, neutral or no opinion were used to create ‘neutral’ ground, which is essential in scales where survey respondents may not have an opinion (Nickitas, 2011). This was not used as a decisive count, as it did not add to either the validation or refutation of findings. In addition, five-point scales indicating either agreement or disagreement with the variables used in the questionnaire were employed to further assess the frequency of use by the survey respondents. To validate the scales, validity and reliability tests were carried out.

### 3.4.5.4. Validity and reliability in quantitative methods

The principles of validity and reliability are two fundamental cornerstones of the scientific methods measurement that have to be taken into account to ensure that the instruments used are both accurate and consistent (Bryman & Bell, 2015).

Quantitative reliability, according to Hair *et al.* (2014), is the extent to which a variable or set of variables is consistent in what it is intended to measure (Hair *et al.,* 2014). Reliability measures the consistency of the instrument. In this case, Cronbach's alpha was used to measure the internal consistency of the instrument. This was corroborated by Salkind (2012), who states that reliability is consistency in performance or prediction.

According to Salkind (2012), internal consistency examines how unified the items are in a test of assessment. A "high" value of alpha is often used (along with substantive arguments and possibly other statistical measures as evidence that the items measure an underlying (or latent) construct. Maraun & Gabriel (2013) provide the following rule of thumb that, if it is > 0.9 – excellent, > 0.8 – good, > 0.7 – acceptable, >0.6 questionable, >0.5 poor and < 0.5 unacceptable.

The generally agreed lower limit for Cronbach's alpha is 0.7, although it may decrease to 0.6 in exploratory research (Hair *et al.,* 2014). The reliability depicted in Table 11 was obtained from the initial items used in order to achieve the desired level of 0.7. Some of the items were removed from the analysis in order to increase the reliability of the instrument. Those items were removed by asking the survey respondents to rate the degree to which the item statement corresponded to the definition of the level of understanding of KM, knowledge creation, HSD and eliminating those with low ratings in order to increase the reliability of the instrument. The targeted threshold level was 0.7.

The reliability coefficient of Cronbach Alpha was chosen over the alternative reliability coefficients because (1) alpha provides a measure of internal consistency of the items forming a multi-items scale, which is consistent with the sampling model by which the scales were developed, (2) alpha generalises split-half and parallel forms coefficients,

(3) compared to test-retest coefficients, alpha neither requires 2-waves of measurement, nor confounds true fluctuations in the variable with the measurement error and (4) alpha provides a lower bound estimate of the proportion of the variance of the true underlying construct (Hair *et al.,* 2014).

Table 11: Reliability results of items

| Area | No. of items | Cronbach's alpha | Acceptable level |
|---|---|---|---|
| Level of understanding KM | 9 | 0.701 | Acceptable |
| KM strategies operational objectives | 19 | 0.831 | Good |
| KM use in the department | 10 | 0.914 | Excellent |
| Effectiveness of KM practices | 11 | 0.785 | Acceptable |
| Knowledge creation | 15 | 0.704 | Acceptable |
| Knowledge acquisition | 14 | 0.893 | Good |
| Knowledge retention/storage | 13 | 0.821 | Good |
| Knowledge share/transfer | 18 | 0.702 | Acceptable |
| Knowledge transfer activities | 20 | 0.773 | Acceptable |
| Knowledge application/use | 10 | 0.896 | Good |
| OP | 19 | 0.924 | Excellent |
| HSD | 4 | 0.750 | Acceptable |
| OC | 23 | 0.844 | Good |
| Organisational structure | 6 | 0.715 | Acceptable |
| Information Technology | 9 | 0.786 | Acceptable |
| Total | 200 | 0.901 | Excellent |

A Cronbach's alpha for KM capability construct measurement was 0.870, surpassing the minimum reliability of 0.07 which indicates a reliable scale. In this case, the reliability of the instruments is of an acceptable standard.

Eleven items shown in Table 12 were removed from the instruments due to relatively low reliability scale. The overall reliability is 0.870, indicating that the instrument is reliable. All analysis will be conducted using reliable items. Factor analysis will be done for all the dimensions with at least five items.

Table 12: Items removed from dimension to increase reliability

| Dimension | Items removed from dimension | Old reliability value | Current reliability value |
|---|---|---|---|
| The level of understanding of KM | Knowledge and information mean the same thing | 0.620 | 0.701 |
| | Knowledge depends on information | | |
| | KM is the same as information management. | | |
| | KM includes information management. | | |
| | Information use can lead to knowledge creation. | | |
| | Data, information and knowledge are preserved in the organisation. | | |
| | KM is all about employee training. | | |
| | The concept of KM is difficult to articulate. | | |
| Knowledge creation | Knowledge collected from external sources is often used in the department. | 0.690 | 0.704 |
| HSD | The department's current service delivery abilities have dropped. | 0.566 | 0.750 |
| | The department's current productivity levels have dropped. | | |

### 3.4.5.5. Survey

In this research, all employees in the GDH and regional healthcare entities were randomly selected for proper representation because public-sector rules, regulations and procedures apply to all the divisions of the GDH and related regional healthcare entities, as they do to all the government departments (national and provincial). The findings derived from the collated data using Region A in Gauteng constitute a good reflection of the GDH.

Table 13: Survey participants

| Business Unit in the Department | | | Position in Department | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | Executive Manager | Senior Manager | Middle Manager | Health Professional | General Staff | |
| Provincial Department | Years employed in the department | Less than 1 year | 0 | 10 | 4 | 0 | 60 | 74 |
| | | Between 1 and 2 years | 0 | 4 | 2 | 0 | 81 | 87 |
| | | Between 6 and 10 years | 3 | 8 | 14 | 0 | 79 | 104 |
| | | Between 6 and 10 years | 3 | 0 | 8 | 0 | 35 | 46 |
| | | Between 11 and 15 years | 0 | 0 | 3 | 0 | 13 | 16 |
| | **Total** | | 6 | 22 | 31 | 0 | 268 | 327 |
| Hospital | Years employed in the department | Less than 1 year | 0 | 2 | 3 | 0 | 15 | 20 |
| | | Between 1 and 2 years | 0 | 1 | 7 | 1 | 17 | 26 |
| | | Between 6 and 10 years | 1 | 1 | 5 | 3 | 46 | 56 |
| | | Between 6 and 10 years | 1 | 1 | 0 | 6 | 21 | 29 |
| | | Between 11 and 15 years | 0 | 0 | 0 | 2 | 9 | 11 |
| | **Total** | | 2 | 5 | 15 | 12 | 108 | 142 |
| HealthCare Clinic | Years employed in the department | Less than 1 Year | 0 | 0 | 0 | 0 | 2 | 2 |
| | | Between 6 and 10 years | 0 | 0 | 0 | 3 | 12 | 15 |
| | | Between 6 and 10 years | 0 | 0 | 1 | 5 | 1 | 7 |
| | | Between 11 and 15 years | 0 | 0 | 0 | 0 | 3 | 3 |
| | **Total** | | 0 | 0 | 1 | 8 | 18 | 27 |
| **Total** | Years Employed in the department | Less than 1 year | 0 | 12 | 7 | 0 | 77 | 96 |
| | | Between 1 and 2 years | 0 | 5 | 9 | 1 | 98 | 113 |
| | | Between 6 and 10 years | 4 | 9 | 19 | 6 | 137 | 175 |
| | | Between 6 and 10 years | 4 | 1 | 9 | 11 | 57 | 82 |
| | | Between 11 and 15 years | 0 | 0 | 3 | 2 | 25 | 30 |
| | **Total** | | **8** | **27** | **47** | **20** | **394** | **496** |

500 questionnaires were administered to the GDH and related regional healthcare entities, cutting across all five categories of executive management, senior management, middle management, healthcare professionals and general staff. Of these 500 questionnaires, eight questionnaires were administered to executive management, 27 to senior management, 47 to middle management, 20 to healthcare professionals and 394 to general staff. 496 questionnaires were received, representing a 99.2% success rate.

Table 13 is a summary presentation showing the questionnaires received and administered.

#### 3.4.5.6. Administering the questionnaires

Given the nature of the survey interaction, questionnaires can be distributed depending on the infrastructure available to the survey respondents.

Table 14 shows the advantages and disadvantages of several data collection methods for research using a survey.

Surveys make use of different methods for data collection as illustrated in Table 14. The data collection methods include among others the mail survey which is a self-administered questionnaire transmitted to survey respondents through e-mail; telephone survey; internet; and face- to-face survey (Bryman & Bell, 2015; Zikmund *et al.,* 2013).

The method chosen will depend on a variety of factors like convenience to the survey respondents, coverage, cost and response rate. The drawbacks to a survey approach to research include the possibility of a low response rate, difficulties with the language used in the survey and also possible misunderstanding of the questions. Possibly the biggest disadvantage is the fact that the survey respondents who decide to participate may not be representative of the original sample which was identified and surveyed. In addition, the obvious limitation to the number of questions and also the type of questions posed may also distort the data gathered from the survey (Leedy & Ormrod, 2015).

Table 14: Data Collection Methods

| Description | Advantage | Disadvantage |
|---|---|---|
| **Mail Survey**<br>A self-administered questionnaire send to survey respondents through e-mail | • Convenient for the survey respondents.<br>• Enables coverage of a larger area.<br>• Lower cost than face-to-face survey. | • No opportunity for the survey respondents to ask for clarification.<br>• Low response rate. |
| **Telephone Survey**<br>An interaction between a researcher and survey respondents over telephone | Allow survey respondents to ask for clarification<br>Higher response rate than mail survey<br>Less expensive than face-to-face survey. | • Restrict the type of data collected.<br>• Random sampling is unlikely to be carried out.<br>• Less in-depth due to a shorter interview. |
| **Internet Survey**<br>A self-administered questionnaire send to survey respondents over the internet | Convenient for the survey respondents.<br>Enable coverage of a larger area. | • Restricted to people who are familiar with a computer.<br>• Restricted to people who have internet access. |
| **Face- to-Face Survey**<br>A direct conversation between a researcher and survey respondents at a mutually convenient place | Allow survey respondents to ask for clarification.<br>Higher response rate than mail survey. | • Time consuming.<br>• More expensive than the other three modes.<br>• Potential bias/participant influenced by researcher. |

Source: Bryman (2012), Zikmund *et al.* (2013)

This study used a web-based distribution of the questionnaire. The researcher noted that, while automated and online data collection tools can be very useful, they should be used to complement and support the research process rather than as a way of avoiding the actual research experience (Rao, 2012; Driscoll *et al.,* 2007).

### 3.4.5.7. Pilot survey on quantitative methods

To promote efficiency in conducting surveys, researchers usually perform a pilot survey, the purpose of which is to identify and eliminate any problems that may exist in a questionnaire and to examine the reliability and validity of measures used in the questionnaire (Zikmund *et al.,* 2013).

Both an external and an internal pilot were conducted. An internal pilot survey was administered to a group of five target participants in the GDH who would not be included in the main survey. An external pilot survey was administered to three professionals. One was a Professor of Tissue Engineering at the Tshwane University of Technology; another was an academic at the University of South Africa who is a statistician. The third was a colleague of the researcher and an IT professional.

The first version of the questionnaire was based on several aspects: clarity, bias, ambiguity, sequence and relevance to the GDH context. In accord with the feedback from the internal pilot survey, certain questions were reworded to reduce the risk of confusing the survey respondents. The sequence of some of the questions was rearranged and some questions relating to GDH were deleted and new ones added.

The revised questionnaire was then tested in the external pilot survey, with this group requested to assess whether the wording of the questions was intelligible so there would be no ambiguity and misunderstanding on the part of the survey respondents when they completed the questionnaire. The comments by this group, led to the wording of some questions being further revised to provide simpler and clearer questions without changing its significance. The pilot survey revealed that the questionnaire required 15 minutes to complete. The pilot survey confirmed that the final questionnaire used in this study could be considered an appropriate instrument for its intended purpose.

### 3.4.6. Qualitative method approach for data collection

The qualitative method of the data collection for this research was carried out by using in-depth, face-to-face interviews. This section describes the qualitative approach for the data collection section of this study. The section begins with a brief summary about qualitative research, followed by the non-probability sampling, semi-structured interview process for data collection along with a general description of the sample, followed by the interview process.

#### 3.4.6.1. Summary of the qualitative method approach

The qualitative methodology approach is a naturalistic approach that seeks to understand the phenomenon in its real-world setting (Maree, 2010; Creswell, 2014). This approach focuses on the in-depth understanding of human behaviour and what governs such behaviour (Du Plessis & Majam, 2010). The assumption made here is that individuals perceive reality according to their experiences and perceptions (Samandra, Ma. & Ananda, 2013).

The qualitative approach also seeks to understand the research question from the perspectives of the population it involves (Maree, 2010). The purpose of the qualitative approach here was to seek new insights into phenomena, to pose questions, to assess the phenomena in a new light by interviewing experts in the subject and to identify further issues related to the topic (Maree, 2010).

The research instruments used for the qualitative method in collecting data consisted of unstructured, non-directive in-depth interviews with senior personnel in the research sample and organisational documents. Qualitative data is the meaning expressed through words and metaphors (Miles *et al.,* 2014; Bazenley & Jackson, 2013) which also involved primary information from GDH's strategic documents and business plans, DoH legislation and regulations, Gauteng provincial regulatory policies, GDH performance reviews, the PFMA and the mid-term expenditure framework (MTEF) of the National Treasury. Other complementary secondary data was collected from publications and conference papers, print media and the internet.

The starting point for this approach required the researcher to conduct fieldwork and attend management and operational meetings, mainly because there was no readily available information about KM in GDH and related regional healthcare entities and hospitals. The fieldwork was followed by conducting open-ended interviews, semi-structured interviews and structured interviews (Maree, 2010) with identified senior employees or champions in the targeted department, regional healthcare entities and hospitals that formed part of this study.

### 3.4.6.2. Non-probability sampling technique for the qualitative method

The non-probability or judgemental sampling technique was used for selecting participants for interviewing during the collection of qualitative data. In qualitative research, a non-probability sampling is the most practical because for non-probability sampling techniques, the issue of sample size is vague and there are no rules. Only the logical relationship between the sample selection technique and the purpose, objective and focus of research is important (Trochim, 2016). The sample size depends on the research question and objectives, what is useful for the research, what will have credibility etc. These will affect the sampling size (Trochim, 2016).

Yin (2014) maintains that there is no specific guide as to the number of survey respondents needed in the sample but researchers usually reach saturation point after interviewing eight participants. Given the nature of the entity or population from which the sample was drawn in this case for qualitative sampling, the non-probability sampling technique allowed the researcher to obtain a pre-set number of cases in each of the predetermined categories that reflected the diversity of the population. (Zikmund *et al.,* 2013; Trochim, 2016).

The researcher carried out 35 semi-structured interviews, concluding that data saturation was reached after interviewing all 35 participants. However, interviewing continued until the adequacy of the information gained was assured. Each interview lasted no longer than 60 minutes. Table 15 shows the interview participants' business unit in the GDH, years of employment in the department and their position in the department.

The interview participants as illustrated in Table 15 were mainly executive managers and senior managers in the GDH and chief executive officers in the provincial hospitals and regional healthcare centres. The table also shows the number of years they were employed in their business units and in their respective positions.

Table 15: Interview Participants

| Business Unit in the Department | | | Position in Department | | Total |
|---|---|---|---|---|---|
| | | | Executive Manager | Senior Manager | |
| Provincial Department | Years employed in the department | Less than 1 Year | 0 | 10 | 10 |
| | | Between 1 and 2 years | 0 | 4 | 4 |
| | | Between 6 and 10 years | 3 | 8 | 11 |
| | | Between 6 and 10 years | 3 | 0 | 3 |
| | | Between 11 and 15 years | 0 | 0 | 0 |
| | Total | | 6 | 22 | 28 |
| Hospital | years Employed in the department | Less than 1 year | 0 | 2 | 2 |
| | | Between 1 and 2 years | 0 | 1 | 1 |
| | | Between 6 and 10 years | 1 | 1 | 2 |
| | | Between 6 and 10 years | 1 | 1 | 2 |
| | | Between 11 and 15 years | 0 | 0 | 0 |
| | Total | | 2 | 5 | 7 |
| HealthCare Clinic | Years employed in the department | Less than 1 Year | | | 0 |
| | | Between 6 and 10 years | | | 0 |
| | | Between 6 and 10 years | | | 0 |
| | | Between 11 and 15 years | | | 0 |
| | Total | | | | 0 |
| Total | Years employed in the department | Less than 1 Year | 0 | 12 | 12 |
| | | Between 1 and 2 years | 0 | 5 | 5 |
| | | Between 6 and 10 years | 4 | 9 | 13 |
| | | Between 6 and 10 years | 4 | 1 | 5 |
| | | Between 11 and 15 years | 0 | 0 | 0 |
| | **Total** | | **8** | **27** | **35** |

### 3.4.6.3. Data collection in qualitative methods

Conducting interviews is the most common data collection method followed in qualitative research (Denzin, 2012). The literature review helped in constructing the interview guide. A set of questions was designed and developed to provide the structure for the semi-structured interviews through generating initial discussion points. The format of semi-structured interviews is neither structured nor completely unstructured, as it is better to let the participants tell their own story (Palinkas *et al.,* 2013). The interview guide is used as a starting point rather than an exhaustive list of topics in strict sequential order (Peters & Halcomb, 2015).

The 35 interviews were conducted over a period of 12 months (March 2013 – March 2014). The interview protocol (Appendix G) included 18 questions and, as suggested by Fletcher (2015), questions were reviewed by two academics from UNISA with backgrounds in KM and statistics. Questions were pilot tested with three executive managers from the GDH. Suggestions were incorporated into a second version which was piloted with the chief information officer (CIO) and the HoD of the GDH. Finally, questions were again modified as recommended, to simplify the wording and to make it easy for participants to answer the questions without any misunderstanding or confusion (see Appendix F).

Thirty-five GDH senior managers from across the divisions of the GDH were intentionally selected (Neuman, 2014) to make up the sample for the interviews. In choosing the 35 executive managers, senior managers and middle managers from the GDH and related regional healthcare entities, their willingness to participate was an overriding consideration (Neuman, 2014). This entailed randomly picking names from a list. This process gave room for equal opportunity for all the GDH entities of being included in the sample. The same procedure was repeated in selecting the persons who formed the sample.

The researcher received permission from the UNISA College of Science, Engineering and Technology Research and Ethics Committee (CREC) to conduct the research (Appendix I). The approval letter from the Research and Ethics Committee was used as an addendum to the letter of request to the GDH to conduct research in the Gauteng provincial DoH (Appendix J).

There were sensitivities when it came to conducting research in government departments, which included relying on documentary evidence. This had to be resolved before research of this magnitude could be undertaken. All these details were necessary if the research was to have credibility. Approval was granted by the Provincial Protocol Review Committee (Appendix K), which is the controlling authority at the GDH. Finally, all the participants received an ‘informed consent for the research project’ form (Appendix L) to request their authorisation and acceptance to participate in the research. They had to accept the background information to the purpose of the study, the procedures, risks, rights of refusal to participate and withdrawal and

confidentiality. The questionnaire and the interview protocol (Appendix G) were attached.

As they all indicated that they were more comfortable there, all the interviews took place in the participants' offices. They pointed out the convenience of reaching for hard-copy documents as and when they were needed. None of the interviews were audio-taped, at the request of the survey respondents but the responses were recorded manually on the interview protocol (Appendix G). The names, positions or other personal details of the participants were not recorded in order to align with the principles of informed consent for a research project (see Appendix L).

The researcher transcribed the full case notes within 48 hours of each interview. As the data was collected, the researcher began to analyse them.

#### 3.4.6.4. Trustworthiness: Validity and reliability in qualitative methods

Unlike quantitative research, qualitative research does not have generally accepted guidelines or evaluation criteria for reliability and validity (Venkatesh *et al.,* 2013). However, regardless of this view of validation in qualitative research, Denzin (2012) stated that there is some agreement that validation is essential in qualitative research to reduce misunderstanding and to develop a common scientific body of knowledge.

Denzin (2012) maintains that, because reliability is a necessary condition for validity, proving validity in qualitative research is enough to establish reliability. Zachariadis, Scott & Barrett (2013) discuss the design validity, analytical validity and inferential validity where design validity refers to how well a qualitative study was designed and executed, so that the findings are credible and transferable; analytical validity refers to how well qualitative data was collected and analysed so that the findings are dependable, consistent and plausible; finally, inferential validity refers to the quality of the interpretation, which reflects how well the findings can be confirmed or corroborated by others.

Accordingly, reliability and validity in the qualitative research section of this study were strengthened through the interview protocol (Appendix G) that was pre-tested, as suggested by (Fletcher, 2015).

- The quality of the data collection is heavily dependent on the researcher's ability to maintain focus (Zachariadis *et al.,* 2013), which was borne in mind when any irrelevant issues came into the discussion. This helped to increase the reliability and validity of the research, in addition to reducing data bias.

Also, in qualitative research, the researcher themselves play a significant role in determining credibility since "the researcher is the instrument" and they influence the research process (Zachariadis *et al.,* 2013). Credibility can be enhanced through activities such as triangulation.

The triangulation strategy employed in this study is the parallel or concurrent mixed-methods strategy (Denzin, 2012) for investigating and answering questions with the intention of advancing objectivity for the research question to be addressed (Yin, 2014; Ozawa & Pongpirul, 2014). Thus, concurrent mixed-methods data collection strategies have been used to validate one form of data with another form and to transform the data for comparison. The study entailed the collection of additional data concurrently, where the researcher relied entirely on the survey respondents to augment their survey answers by following up on such issues.

a) Semi-structured interviews

Conducting the semi-structured interviews gave the researcher the opportunity of scrutinising, probing, discussing answers in detail and building on the interview participants' responses. The researcher followed a semi-structured interview protocol (Appendix G) that began with general questions about the participants and their experience in the organisation. The design of the semi-structured interviews enabled the researcher to ask open-ended questions that outlined the themes to be covered.

This instrument was used to gain understanding of the existence of KM and its application in the GDH and to determine whether the KM principles are applied in any

way in the department. The interview was also used to examine the effect of KM on the improvement of OP and HSD.

The specific approach employed in this study was the collaborative narrative approach (Shaw, 2010), which involves locating knowledge in its form of KPC within the day-to-day operations of the GDH employees. In the results of these interviews, the researcher revealed the attitude of the GDH employees to KM, which helped in building a wider picture of the literature, based on the gathered data.

Although the questions are in a standardised format, the researcher sought both clarification and elaboration on the answers given (Maree, 2010). The interview technique is a very effective way of gaining in-depth understanding of the observed phenomena first hand (Palinkas *et al.,* 2013). It allows for more diversified responses. All the interviews were conducted in the work environment. This provided a better picture of what was happening, as insights were gained from body language and information from the environment. The response rate was good, as all 35 interviews took place and all the interviewees were met face-to-face and responses were obtained as soon as the interviewees had agreed to be interviewed.

An advantage of the interview protocol (Appendix G) is that it gives a previously prepared explanation of the purpose of the study and instructions to the interviewer, which makes it more convincing. The interview protocol produces the key research question, probes to follow key questions, space for recording the interviewer's comments and standardised explanations of the problems being investigated. This precluded misunderstanding, in this case and helped maintain control over the order and sequence in which the questions were answered. The interviews afforded the researcher the opportunity to see and talk to the people and note down a set of real responses. These interviews with GDH managers and senior managers revealed a great deal about the way in which explicit knowledge is managed and shared in the department and among colleagues, as well as defining available KPC practices in the GDH.

The only difficulty with the interview technique was that the responses, particularly those to unstructured and open-ended questions, proved difficult to code and analyse.

Such varied responses and variables needed careful coding. Apart from this, engaging the interview participants' interest and attention during the interviews to create and sustain rapport proved difficult to achieve in some cases.

b) Organisational documents review

This study required delving into the GDH archives, which were stored mainly in folders on databases and shared drives. Organisational documents played a critical role in supporting and augmenting data from other sources and were important for this type of case-study (Altheide, Coyle, DeVriese & Schneider, 2010). This kind of documentation informed the research process at several stages of the study through important details that filled in the blanks for outstanding questions and rich contextual information and better overall understanding of the phenomenon under investigation.

Further, this documentary analysis was undertaken to complement the other instruments used in this study and to formulate context-specific questions in the questionnaires (Altheide *et al.,* 2010). Some of the information in these organisational documents containing policies and procedures, rules and regulations and operational plans of the GDH was helpful in giving insight into the role of the OC, organisational transformation, the knowledge-based view and public-sector reform of HSD. All these forms the very core of this study.

The reason for undertaking an analysis of organisational documents is that the GDH, as a highly regulated and legislation-driven organisation, has a huge collection of recorded documents comprising historical documents, laws, declarations and statutes. Any research carried out with a view to revealing the insights by the GDH therefore has to include these organisational documents. Document exchange is a highly effective and efficient mechanism for sharing codified knowledge (Altheide *et al.,* 2010).

As in the case of the information and data to be collected from interviews, the aim of the examination of organisational documents is to gain greater clarity on how GDH knowledge, is accessible to those who are authorised to obtain it. It will also help in comparing findings from available literature on all the elements of knowledge and bring

to the fore the sub-dimension that the present study is investigating, which is how OP and HSD could be improved as a result of the use of KM.

### 3.5. Data analysis and presentation

Data analysis relates to what is done with the information collected from the research process in order to make sense of it. When dealing with a case study, Yin (2014) suggests that a researcher needs to determine how to analyse evidence before beginning the data collection process. He proposes strategies for data analysis. The first strategy relies on theoretical propositions. It involves the use of literature review and research questions to determine the objectives and design of the case study.

Additionally, Palinkas *et al.* (2015) posited that data collection methods and data analysis are also determined by the theoretical propositions. The second strategy, used in the absence of theoretical propositions, is a descriptive framework for a case study (Pawlowski & Bick, 2012). This is useful where the researcher has found gaps in the current literature and used that to formulate the research questions, so that the data collection methods and research strategies are derived from the research questions and objectives.

#### 3.5.1. Analysis of data in mixed-methods approach

The seven stages of mixed-methods data analysis (Table 16) follows after the data collection step. The first step is the data reduction step, which reduces the dimensionality of the qualitative data via thematic analysis for qualitative analysis and via descriptive statistics or exploratory factor analysis for quantitative data. The data display is the second step in the process which describes pictorially the qualitative data (e.g., graphs and charts) and in tables, graphs for quantitative data. The third step is the data transformation which is quantitising data by converting qualitative data into numerical codes that can be analysed statistically and/or qualifying data by converting quantitative data into narrative representations that can be analysed qualitatively.

Data correlation is the fourth stage in the process and it correlates qualitative data with quantified data or quantitative data being correlated with qualified data. The fifth stage is data consolidation which is combining qualitative and quantitative data to create new or consolidated variables, codes, or data sets. Data comparison is the sixth stage which is comparing data extracted from the qualitative and quantitative components. Lastly data integration is integrating qualitative and quantitative data into either some coherent whole or separate qualitative and quantitative sets of coherent wholes.

Table 16: Stages of the mixed-methods data analysis process

| STAGE | DEFINITION |
|---|---|
| **Data reduction,** | Data reduction involves reducing the dimensionality of the qualitative data (e.g., via exploratory thematic analysis, memoing) and quantitative data (e.g., via descriptive statistics, exploratory factor analysis, cluster analysis). |
| **Data display,** | Data display, involves describing pictorially the qualitative data (e.g., matrices, charts, graphs, networks, lists, rubrics, and Venn diagrams) and quantitative data (e.g. tables, graphs). |
| **Data transformation** | Data transformation stage, wherein quantitative data are converted into narrative data that can be analysed qualitatively (i.e., qualitised; Tashakkori & Teddlie, 1998) and/or qualitative data are converted into numerical codes that can be represented statistically (i.e., quantitised; Tashakkori & Teddlie, 1998). |
| **Data correlation** | Data correlation involves the quantitative data being correlated with the qualitised data or the qualitative data being correlated with the quantitised data |
| **Data consolidation** | Data consolidation, wherein both quantitative and qualitative data are combined to create new or consolidated variables or data sets. |
| **Data comparison** | Data comparison involves comparing data from the qualitative and quantitative data sources. |
| **Data integration** | Data integration characterizes the final stage, whereby both quantitative and qualitative data are integrated into either a coherent whole or two separate sets (i.e., qualitative and quantitative) of coherent wholes. |

Source: Denzin (2012)

### 3.5.2. Quantitative data analysis techniques

The researcher used statistical analysis to test the hypothesis and answer the research question. This analysis grouped data into categories, which were tested for their reliability (Flyvbjerg, 2016; Palinkas *et al.,* 2013; Du Plessis & Majam, 2010).

a) Statistical processing of survey data

The data collected from the survey were rearranged using the SPSS version 23 and AMOS version 17.0 (Analysis of Moment Structures), in a statistical pattern, edited and analysed using frequencies, percentages, the Pearson correlation and Chi-square, Presentation formats (pie and bar charts) were used to emphasise the descriptive statistics and results obtained.

The frequency and percentage displayed the number of occurrences side by side to the corresponding variables used in this research. The inferential statistics were performed to enable the researcher to make inferences about the data. SEM was carried out to assess the overall structural fit between the constructs. Standard multiple regressions were then performed in order to determine the proportion of variance that was explained by the independent variable regarding the scores of the dependent variable. Chi-square was used to test the hypotheses, while the Pearson correlation was used to test the hypothesis in respect of the relation between the dependent and independent variables.

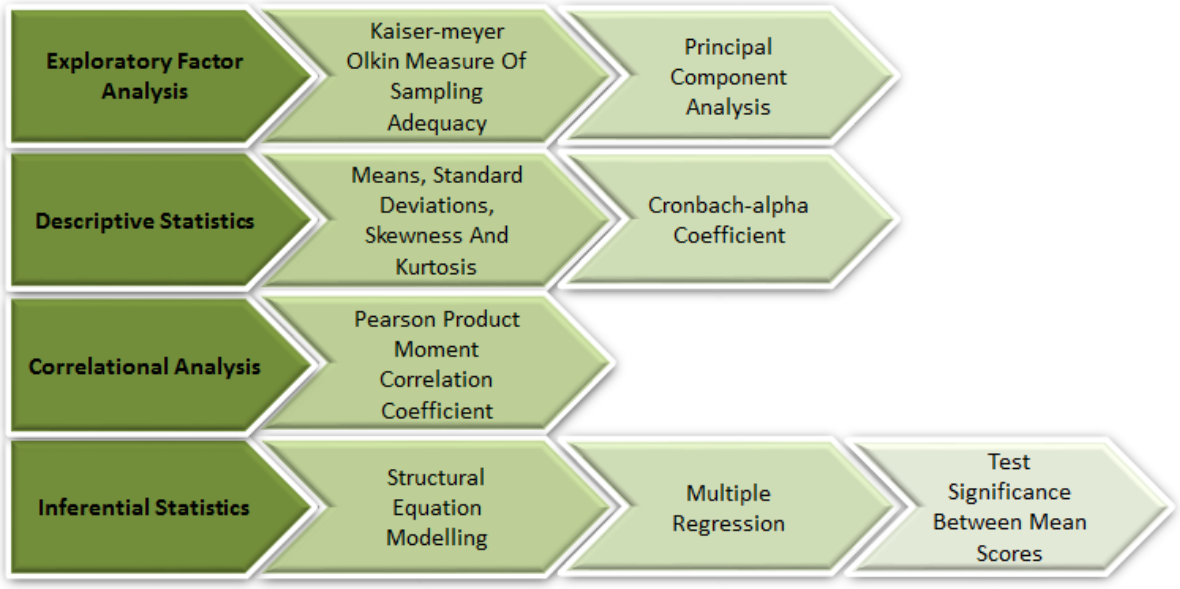



Figure 27: Stages of statistical processing

A quantitative survey research design, focusing on descriptive, correlational and inferential statistical analysis, was also used to realise the empirical research objectives. Survey research designs are used when a possible or potential relationship between two or more variables at a specific time is investigated (Graff, 2014; Castro

*et al.,* 2010). The statistical programme SPSS version 23 was used to analyse the data (Connolly, 2011).

The stages of statistical processing (Figure 27) comprised the following four stages:

- Firstly, an Exploratory Factor Analysis was performed to assess the construct validity of KM capability instrument. Thereafter, the categorical and frequency data (means and standard deviations) were determined for the total sample in order to apply the statistical procedures. Cronbach's alpha coefficients were also determined for the two scales to determine the internal consistency reliability of the instruments used for the purpose of the study.

- Secondly, descriptive statistics were used to describe or summarise data to aid a detailed examination and to choose appropriate statistical analysis techniques (Leedy & Ormrod, 2015). The descriptive statistics used to analyse data in this study included frequencies, means, standard deviations, skewness and kurtosis. The scores across these factors made it possible to obtain a better comparison between the various scale dimensions.

- Thirdly, correlation tests were conducted to investigate the direction and strength of the relationship between the variables, as measured by the KM capability instrument. Pearson product-moment correlation coefficients were applied.

- Fourthly, inferential statistics were used to enable the researcher to draw inferences about the data. Multiple regressions were performed in order to determine the proportion of variance that may be explained by the independent variable. Inferential statistical analyses (tests for significant mean differences) were performed to determine whether the gender, race and age groups differed significantly in terms of the constructs measured. Tests for significant mean differences were performed for this purpose.

The process of determining whether a relationship existed between KM capabilities, OP and HSD using the stages of statistical processing (Figure 29) may be described in detail as follows:

First, an exploratory factor analysis was performed to assess the construct validity of the questionnaire. Thereafter, the categorical and frequency data (means and standard deviations), as measured by the questionnaire, were taken into account. The questionnaire was determined for the total sample in order to apply the statistical procedures. Cronbach's alpha coefficients were also determined to assess the reliability of the instruments for the purpose of the study. This was followed by correlation analysis conducted to investigate the direction and strength of the relationship between the variables measured by the questionnaire and then the Pearson product-moment correlation coefficients were applied.

Finally, the inferential statistics were performed to enable the researcher to make inferences about the data. The SEM was carried out to assess the overall structural fit between the constructs. Standard multiple regressions were then performed to determine the proportion of variance that was explained by the independent variable regarding the scores of the dependent variable.

b) Exploratory factor analysis

An EFA was conducted to determine the construct validity of the instrument – in other words, the degree to which the instrument items actually represented what they purported to represent (Driscoll *et al.,* 2007). Patterns in the data set were explored by examining the correlations between variables and describing these patterns of the developed instrument.

To determine the reliability (internal consistency) of the discovered factors of the instrument, Cronbach alpha was used. The purpose was to determine the degree of accuracy of the items in measuring the factors.

Exploratory factor analysis is used to reduce the data so as to be able to interpret it more easily for research purposes. The assumption underlying exploratory factor

analysis is that common factors exist in the data but that these factors may be indirectly measured by the observed variables. Consequently, the common factors are concealed, although they impact on the observed variable(s).

Exploratory factor analysis may be effectively used without hypothesising about a possible covariate structure prior to the analysis (Salkind, 2012). The number of factors may be determined by using one or a combination of methods. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used here to assess the suitability of the survey respondents' data for factor analysis. The KMO value was used to determine the appropriateness of the data sets for the factor analysis; a value greater than 0.5 represents an acceptable condition (Kozan & Richardson, 2014; Salkind, 2012). The results showed that all of the items had factor loadings that were greater than 0.50 on one factor (Figure 21 to Figure 26). Factor loadings greater than 0.30 are considered significant, loading of 0.40 are considered very significant (Hair *et al.,* 2014). The KMO index ranges from 0 - 1, with 0.50 considered suitable for factor analysis. The Bartlett's Test of Sphericity should be significant ($p<.05$) for factor analysis to be suitable.

c) Confirmatory factor analysis

Confirmatory factor analysis (CFA) is defined by (Huang, 2014; Zack *et al.,* 2009), as a multivariate statistical procedure used to assess how well the measured variables represent the number of constructs. It is driven largely by the theoretical relationships among the observed and unobserved variables with the ultimate objective to determine the ability of a predefined factor model to fit an observed set of data.

CFA and EFA are the two techniques of factor analysis but in EFA, data is simply explored and provides information about the numbers of factors required to represent the data. It attempts to discover the nature of the constructs influencing a set of responses. In EFA, all the measured variables are related to every latent variable, whereas CFA is a tool that is used to confirm or reject the measurement theory.

d) Descriptive statistics

The Cronbach's alpha coefficient (internal consistency reliability) indicates the extent to which all the items in a survey assess the same attribute. Internal consistency reliability focuses on the way in which the data produced by a survey may be generalised across the survey items. Internal consistency is assessed by comparing the scores on each of the items of the assessment scale with the score on all the items of the assessment scale (Hair *et al.,* 2014; Salkind, 2012). When the items on a survey show high internal consistency, a respondent who has achieved high scores on a few items will probably achieve high scores on most, or all, of the items (Salkind, 2012).

The Cronbach's alpha coefficient is the most frequently used statistical measure to establish internal consistency reliability. The Cronbach's alpha has a range of 0 - 1, where 0 indicates no internal consistency and 1 is the maximum internal consistency. A "high" value of alpha is often used as evidence that the items measure an underlying (or latent) construct. Maraun & Gabriel (2013) provide the following rule of thumb: > 0.9 – excellent, > 0.8 – good, > 0.7 – acceptable, >0.6 questionable, >0.5 poor and < 0.5 unacceptable. The generally agreed lower limit for Cronbach's alpha is 0.7, although it may decrease to 0.6 in exploratory research (Hair *et al.,* 2014).

e) Means, standard deviations, skewness, kurtosis and frequencies

The descriptive statistics used to analyse data in this study included frequencies, means, standard deviations, skewness and kurtosis. The scores across these factors were created by obtaining an average across all the items in each of the factors. The use of the means scores, instead of the total scores, made it possible to obtain a better comparison between the various scale dimensions.

Frequencies are observations and recordings of the frequency with which certain data occur. Frequency distributions are often used to present research results and to reduce the influence of extraneous variables (Salkind, 2012). The mean of a data set is a measure of central tendency and is calculated by adding all the scores and dividing by the number of scores. The mean is considered to be the most reliable measure of central tendency and is the measure used the most often (Salkind, 2012). Data

dispersion or variability is measured by calculating variance and standard deviation (Nisbet, Miner & Elder, 2009). The calculation of the means in a set of data indicates the average values or central tendencies of the data, while the standard deviation provides an indication of the way in which the raw data are distributed around the mean (Nisbet *et al.,* 2009).

The larger the standard deviation (SD) of a data set, the more variable the raw scores, while a low standard deviation indicates a low variability of the raw scores. When the SD = 0, all the raw scores are the same. When the spread of the data is narrow (data is grouped closely around the mean), the variance and SD of the data set are comparatively low and vice-versa (Nisbet *et al.,* 2009).

Skewness and kurtosis indicate the shape of the data set (Nisbet *et al.,* 2009). Data skewness is indicated by a data distribution which is mostly to one side of the mean, while kurtosis indicates the degree to which the data is distributed closely around the mean (Nisbet *et al.,* 2009).

f) Correlational statistics: Pearson product-moment correlation coefficient

Correlations are used to establish the nature of the relationship between diverse variables (Leedy & Ormrod, 2015). A correlation coefficient for two variables may indicate the direction and strength of the relationship. The Pearson product-moment correlation was used to identify the direction and strength of the relationships between the KM capabilities and OP attributes. The correlation coefficient carries a value of between r = −1.00 and r = +1.00. A value of r = –1 indicates a perfect negative correlation while a value of r = +1.00 indicates a perfect positive correlation.

A positive correlation indicates that one variable will increase as the other increases, while a negative relationship indicates that one variable will increase as the other decreases. The size of the correlation coefficient indicates the strength of the relationship (Leedy & Ormrod, 2015). The validity and reliability of the measuring instruments used to assess the two variables will influence the correlation coefficient. It is essential to keep in mind that correlation provides no indication of cause (Leedy & Ormrod, 2015).

In practice, a general level of significance at $p \leq .05$ is chosen to test a hypothesis. However, the researcher may make two types of error, namely, Type I and Type II errors. A Type I error occurs when the researcher falsely rejects a null hypothesis by stating that a relationship exists when, in fact, there is no relationship. A Type II error occurs when the researcher falsely accepts a null hypothesis by stating that a relationship exists when, in fact, no relationship exists between the variables (Salkind, 2012). A significance level of $p \leq 0.05$ was used here. All the p-values were compared with this value. When $p \leq 0.05$, the results were treated as significant.

g) Inferential statistics

Inferential statistics were performed to enable the researcher to make inferences about the data. These included SEM. Inferential statistics describe and illustrate the inferences that a researcher may draw about a population according to the specified indices, based on the equivalent indices acquired from random samples of the population (Salkind, 2012). Inferential statistics test for differences between variables and are used to make predictions, based on the data collected in the study. Inferential statistics are also used to generalise findings from a sample to a population (Salkind, 2012). Statistical significance is also an important concept in inferential statistics. Statistical significance focuses on the possibility of rejecting a null hypothesis that is, in effect, true (Type I error), or accepting a null hypothesis when it is actually false (Type II error). The possibility of a Type II error decreases as the sample size increases (Salkind, 2012).

h) Equation modelling

SEM is a multivariate procedure which combines multiple regression and factor analysis. It is based on a comparison of covariance structures between a previously constructed theoretical model and an empirically derived data-based model (Ullman, 2013; Hair *et al.,* 2014). SEM is divided into two different parts, including a measurement model and a structural model. The measurement model deals with the relationships between the measured and latent variables whereas the structural model deals with the relationships between the latent variables only (Ullman, 2013).

The SEM statistical modelling technique includes CFA, path analysis and regression analysis (Ullman, 2013). It is mostly used to determine whether a certain model is valid, as opposed to finding a suitable model. If the two models are consistent with each other, the originally conceived structural model may be considered to be a plausible explanation for observed relationships between measured and latent variables (Ullman, 2013).

The SEM process focuses on the validation of the measurement model by obtaining estimates of the parameters of the model and by assessing whether the model itself provides a good fit with the data (Ullman, 2013). The adequacy of the model is evaluated by means of goodness-of-fit measures which determine whether the model being tested should be accepted or rejected (Ullman, 2013).

SEM was used to investigate the structural model fit between knowledge infrastructure capability (KIC), knowledge process capability (KPC), OP and HSD attributes. The goodness-of-fit statistics were evaluated by using the following absolute goodness-of-fit indices: The Chi-square test and the root mean square error of approximation (RMSEA).

$$RMSEA = \sqrt{\frac{\frac{x_t^2 - df_t}{N-1}}{df_t}} = \sqrt{\frac{\frac{x_t^2}{df_t} - 1}{N-1}} = \sqrt{\frac{F_t}{df_t} - \frac{1}{N-1}},$$

where $x_t^2$ represents the observed $x^2$ test statistic for the target model, $df_t$ represents the degrees of freedom for the target model, N represents the sample size and $F_T$ represents the minimum fit function value for the target model. The RMSEA represents a measure of approximate fit rather than perfect fit, with an attempt to remove the effects of $d_f$ and sample size (Davcik, 2014; Huang & Lai, 2012) stipulates that values of less than 0.05 represent a good fit.

i) Tests of significant differences between mean scores

Based on the test for normality showing that the data from the sample in this study were not normally distributed, nonparametric tests were used to test for significant mean differences between the variable attributes. Non-parametric analyses are usually conducted on data for which the assumption of normality could not be verified (Nisbet *et al.,* 2009). In view of the fact that it is not possible to use the raw data in these analyses, ordered values are used (Nisbet *et al.,* 2009).

The Mann-Whitney U test is used for the comparison of two independent groups (e.g. gender), while the Kruskal-Wallis test is used for the comparison of two or more independent groups (e.g. race and age). The Mann-Whitney U test focuses specifically on determining whether observed data in one population is ranked higher than observed data in another population (Nisbet *et al.,* 2009). Although the Mann-Whitney U and Kruskal-Wallis tests are indicated where sample sizes are small (< 100), these tests were used in this study because it was not possible to verify the assumption of normality.

Data analysis in Chapter Four was undertaken using the SEM for the appropriate variables (Section 4.8) for quantitative analysis.

### 3.5.3. Qualitative data analysis techniques

Qualitative data often comes in the form of written words or verbal phrases representing people or describing actions and events (Onwuegbuzie *et al.,* 2010). The researcher used, for the case-study, thematic analysis as the method of qualitative analysis to interpret the data gathered from the interviews, a method used for identifying, analysing and reporting patterns and themes that emerge within the data. This was achieved by using general ideas, themes or concepts as analytical tools, thereby eliminating certain explanations by showing that a wide array of evidence contradicts them (Neuman, 2014). Finally, there was the synthesis of the results and generalisations (Leedy & Ormrod, 2015).

Thematic analysis for qualitative data related to the relevant narrative data (Tashakkori & Teddlie, 2010b) is appropriate for this study, as the objectives were to unearth contextually relevant variables, while also identifying extant theory of relevance to the use of KM for the improvement of OP and HSD. The relevant narrative data requires a degree of flexibility when performing analysis, which is facilitated by thematic analysis and allows on-going engagement with the literature throughout the analytic process (Tariq & Woodman, 2013).

Further, although it is often presented in a linear, step-by-step procedure, thematic analysis is an iterative and reflexive process (Punch, 2015), which allows the analysis (refer to Section 5.6) to move from the initial inductive identification of themes from the interview participants' perspective, to a more theory-driven analysis when grouping and coding these themes, relative to existing theoretical constructs identified by the on-going literature review.

The researcher also used the narrative strategy to analyse qualitative data, searching for convergence (triangulation) of data or information that must all point in the same direction (Leedy & Ormrod, 2015). The narrative strategy allowed the researcher to capture the richness, describe the unique complexities of data and assemble very specific concrete details that may contribute to a complete explanation.

a) Interview data (qualitative data)

In the analysis of the interview data, the three main steps of data analysis were employed: data reduction, data display and conclusion drawing verification. This will be discussed in more detail in Section 5.5 of Chapter Five.

b) Presentation (qualitative data)

The presentation of the results was done with written descriptions, numerical summarisations, figures and graphs. This is the final stage of data analysis and is concerned with drawing conclusions (Teddlie & Tashakkori 2010b). This enabled a comparison between quantitative and qualitative data (Palinkas *et al.,* 2013). It was done by looking at the comparison of the two data sets to correlate possible similarities or differences in the data (Palinkas *et al.,* 2013), as well as the patterns and regularities

discovered (Peters & Halcomb, 2015) and explaining these in light of the flows and propositions already established (Ozawa & Pongpirul, 2014).

This stage of the data analysis process (interpretations and conclusions) was undertaken bearing in mind the above submission and the fact that the themes discussed in the course of the analysis served to answer the research questions, thereby realising the objectives established for this research.

### 3.6. Evaluation of the research methodology

The sources of data included documents, archival information, interviews and questionnaires. The rationale for using this methodology was that information from any single source would not provide sufficient data or explanations. According to Curry & Nunez-Smith (2014), using mixed-method research provides researchers with the possibility of addressing issues from a large number of perspectives. That in turn may enrich and enhance the research findings. This means that data collection and data analysis techniques were in the context of a mixed-methods approach.

The triangulation design type was preferred in this case due to its ability to accommodate both types of research running concurrently. Triangulation was used for corroborating and testing the consistency of the findings obtained from both qualitative and quantitative methods. It was useful in controlling the tendency to make false conclusions. In addition to the suggestion made by Woolley (2009: 8) that “quantitative and qualitative methods provide differing perspectives on a subject and this is why the use of both may be viewed as complementary rather than validatory”, mixed-methods also enable corroborating and confirming facts.

A case study was suitable for this research because the focus was unique and sought to understand the particulars of GDH and its PHC facilities in their own complexities. Finally, the limited time scale for the research made the case study approach appropriate since it allowed for the investigation of a particular phenomenon to some depth in a short time.

## 3.7. Ethical issues

The concept of anonymity and confidentiality was duly considered during this research (UNISA, 2014). While the former has to do with a researcher not identifying a participant in a study, the latter means that a researcher can match names with responses but must ensure that no one else will have access to this information (Snowden, 2014).

The researcher explained the nature of this study to the participants during the interviews and the survey. This was done to clarify and reassure participants about their responses being treated in total confidence. The researcher also made sure that participants' consent was sought before interviews were recorded. Interviewees were also asked if their positions but not their names, could be referred to in the study. Most of them agreed that this could be done for illustrative purposes.

## 3.8. Summary

This chapter justified the research methodology employed. It considered the issues that make up social research and focused on the methods and the methodology employed. Based on the issues that constitute the research, mixed-methods research methodology was considered appropriate for addressing the research problem through four research questions. An in-depth explanation of the various methods of research and a justification for the choice of the mixed-methods (triangulation) approach on which this research is based was also offered. Literature that supports or refutes the use of the processes was analysed. The rationale for the choice of the GDH as a setting for this study was also put forward.

The sampling techniques used are also contained in this chapter. These included the method employed in selecting the survey respondents who took part in this study. The chapter also discusses the method used in administering the instruments, in addition to the type of questions contained in the questionnaire and interview protocols. Content validity was addressed, as the measurement items selected were driven from an extensive and thorough review of the relevant literature.

Concluding this chapter, the ethical concerns about data collection and how it would be handled were also discussed; Chapter Four and Chapter Five will respectively present the results of this study's quantitative and qualitative data analyses.

## CHAPTER FOUR: QUANTITATIVE DATA ANALYSIS

> I have always loved to begin with the facts, to observe them, to walk in the light of experiment and demonstrate as much as possible and to discuss the results.
>
> — Giovanni Arduino (1714-1795)

### 4.1. Introduction

This study investigated the use of KM for the improvement of OP and healthcare services at the GDH. As stated earlier in Chapter Three in the context of this research, the researcher did not align this research design exclusively with either the quantitative or the qualitative methods. The reason for that is that quantitative approaches have not always been successful in capturing and explaining the dimensions of behaviour in the same way as they capture information and explanations that are adequate at the level of meaning. By contrast, the qualitative approach takes a more inductive path where data will be collected, not only from the source but also from the environment in which the source resides. The researcher proceeded to afform that, the quantitative methods helped to understand the ‘what’ question, while qualitative methods aided understanding of the ‘why’ question. Their combination gave a wider picture and a deeper understanding of the need for KM and the role it plays in OP and HSD in the GDH.

These methods allowed the researcher to generalise from the data derived from a quantitative approach and clarify the quantitative findings, as well as explore the findings based on the qualitative interviews.

The objective of this chapter is to analyse quantitative data acquired from the questionnaire survey. The questionnaire addressed all four objectives of the study, namely, biographical information about the participants; the understanding and definition of KM to KM evaluation and application; OP and HSD; as well as OC and OS. However, the analysis and presentation of results did not follow the sequence of sections in the questionnaire. The results from the research questions were organised

into categories that could appropriately address the research objectives expressed in the research question.

The quantitative analysis appears in this chapter.

### 4.2. Participation in survey

Table 17: Consent to participate in this survey

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Provincial Department | 327 | 65.9 | 65.9 | 65.9 |
| | Hospital | 142 | 28.6 | 28.6 | 94.6 |
| | HealthCare Clinic | 27 | 5.4 | 5.4 | 100.0 |
| | Total | 496 | 100.0 | 100.0 | |

The information in Table 17 represents the proportional sample that was used. Out of 500 employees from GDH and related healthcare entities, 496 participants from the GDH and its related regional healthcare entities and hospitals consented to participate in the survey and responded (Table 17). This means that a 99.2% response rate of research results was obtained.

### 4.3. Issues of concealing true feelings

It was noticed that some participants marked ‘neutral’ or ‘no opinion’ where a reflection of what they believe should not be the correct answer but rather an honest reflection of their actual experiences. One wonders if those participants were not doing so to protect themselves as they were aware that ‘strongly disagree or disagree’ would attract negative attention and often drastic reaction from senior leadership at GDH, including retribution and victimisation.

Despite the research challenges provided above, the researcher believes that the data provided do represent a true reflection of the situation.

### 4.4. Hypothesis of the study

The hypotheses of the study are outlined in Table 18.

Table 18: Hypothesis to be tested

| | | |
|---|---|---|
| **Hypothesis 1** | **$H_0$:** | Knowledge infrastructure capability - Information technology does not significantly impact on organisation performance |
| | **$H_1$:** | Knowledge infrastructure capability - Information technology significantly impacts on organisation performance |
| **Hypothesis 2** | **$H_0$:** | Knowledge infrastructure capability - Organisation structure does not significantly impacts on organisation performance |
| | **$H_1$:** | Knowledge infrastructure capability - Organisation structure significantly impacts on organisation performance |
| **Hypothesis 3** | **$H_0$:** | Organisation performance does not significantly impact on healthcare delivery |
| | **$H_1$:** | Organisation performance significantly impacts on healthcare delivery |

The hypotheses were tested through structural equation modelling.

### 4.5. Descriptive statistics of the sample

The study generated large amounts of data that needed to be sufficiently analysed with appropriate techniques in order to be useful. The first step was to create a database of the range of quantitative data collected. The SPSS version 22 statistical analysis tool was very helpful for organising and analysing the range of data collected. The quantitative statistical analysis approaches were used to identify findings and work towards conclusions to surpass the initial impressions and to develop accurate and reliable findings.

The statistical analysis approach enabled synthesising, analysis and highlighted preliminary findings. Utmost care was taken to assess all available data to identify any evidence that might not have supported the initial findings. This was done to avoid premature or inaccurate conclusions. This approach was supported by (Bryman & Bell, 2015), who also concluded that data analysis ends when the best possible fit has been reached between observations and interpretations.

A total of 496 employees participated out of an intended target of 500, giving a 99.2% response rate but no statistically significant differences between survey respondents and outliers were detected. Notwithstanding the decision not to use the standard deviation, it was necessary to detect the presence of outliers. There was therefore, no need to use SD based on the characteristics of a normal distribution for which 99.87% of the data appear within this range (Sánchez-Fernández, Muñoz-Leiva, & Montoro-Ríos, 2012; Hunter 2012). Four (0.8%) individuals out of the whole sample of 500 choose not to agree to participate or simply ignored the invitation. This is a high response rate as proposed by Sánchez-Fernández *et al.* (2012) and Hunter (2012), who reported that the average response rate is only 55.6% (SD = 19.7).

The high response rate was achieved mainly as a result of personalisation of the questionnaire with a detailed explanation of the research, informed consent that emphasised the management of risk and anonymity, a periodic reminder and follow-up mailing (McPeake, Bateson & O'Neill, 2013), as well as a request to GDH employees from the HoD of the GDH and the chairperson of the PPRC. Equally important is the recognition that this level of the response rate was consistent with the findings by Hunter (2012), that survey respondents find it convenient and easy to access a web-based questionnaire. Likewise, the anonymity and sense of social distance created by the internet also appear to help with the discussion of sensitive issues.

After only 50 responses had been received, reminder messages were sent out in the third, fourth, fifth and sixth weeks of the data collection period. The messages were identical in all instances with the addition of a statement indicating that the researcher had not received a response to an earlier request. The survey link was also included with the reminder.

This practice was consistent with the suggestions by Hunter (2012) as a mechanism to improve the response rate. The researcher also sent the initial e-mail to executive managers and senior managers at the GDH who in turn informed their staff about the survey. The prompt response rate meant that it was not necessary to send any further reminders. The socio-demographic variables are presented in Table 19.

Table 19: Characteristics of the employees that participated in the sample

| VARIABLE | CATEGORY | FREQUENCY | % |
|---|---|---|---|
| Business unit | Provincial department | 327 | 65.9% |
| | Hospital | 142 | 28.6% |
| | Healthcare clinic | 27 | 5.4% |
| | **Total** | **496** | **100.0%** |
| Gender | Male | 204 | 41.5% |
| | Female | 290 | 58.5% |
| | **Total** | **496** | **100.0%** |
| Age in years | Less than 25 years | 33 | 6.7% |
| | 25 – 29 years | 88 | 17.7% |
| | 30 – 34 years | 159 | 32.1% |
| | 35 – 39 years | 102 | 20.6% |
| | 40 – 44 years | 74 | 14.9% |
| | 45 – 49 years | 23 | 4.6% |
| | 50 years and above | 17 | 3.4% |
| | **Total** | **496** | **100.0%** |
| Current position | Executive Manager | 8 | 1.6% |
| | Senior Manager | 27 | 5.4% |
| | Middle Manager | 47 | 9.5% |
| | Health Professional | 20 | 4.0% |
| | General Staff | 394 | 79.4% |
| | **Total** | **496** | **100%** |
| Staff category | Full-time | 468 | 94.4% |
| | Part time | 24 | 4.8% |
| | Contractor | 4 | 0.8% |
| | **Total** | **496** | **100.0%** |
| Race | Black | 321 | 64.7% |
| | White | 90 | 18.1% |
| | Coloured | 59 | 11.9% |
| | Indian | 26 | 5.2% |
| | **Total** | **496** | **100.0%** |
| Number of years working in department | Less than a year<br>1 - 2 years<br>3 - 5 years<br>6 - 10 years<br>11 - 15 years | 96<br>113<br>175<br>82<br>30 | 19.4%<br>22.8%<br>35.3%<br>16.5%<br>6.0% |
| | **Total** | **496** | **100.0%** |
| Number of years working in current position | Less than a year | 220 | 44.4% |
| | 1 - 2 years | 139 | 28.0% |
| | 3 - 5 years | 65 | 13.1% |
| | 6 - 10 years | 72 | 14.5% |
| | **Total** | **496** | **100.0%** |

| | | | |
|---|---|---|---|
| Highest academic qualification | Standard 8/ Grade 10/N1 | 10 | 2.0% |
| | Standard 9 / Grade 10 / N2 | 32 | 6.5% |
| | Standard 10 / Grade 12 (Matric) / N3 | | |
| | Diploma/Certificate (vocational training) / T3 / S3/ N6 | 136 | 27.4% |
| | University degree / T4 / Higher Diploma | 201 | 40.5% |
| | Professional (e.g. MBChB) | | |
| | Master's Degree | | |
| | | 95 | 19.2% |
| | | 12 | 2.4% |
| | | 10 | 2.0% |
| | **Total** | **496** | **100.0%** |

The majority of the survey respondents were from the provincial department and they comprised 65.9% (n=327). It was not surprising that very few survey respondents 5.4% (n=27) were from the regional healthcare clinics: this was due principally to insufficient ICT infrastructure. The majority of these survey respondents were permanent staff members and they comprised 94.4% (n=468); Seventy-nine percent (n=394) of them were of the general staff rather than management and the gender was essentially evenly distributed with the number of females being slightly higher at 58.5% (n=290). More than half of the survey respondents 52.7% (n=161) were between 30 years and 39 years old, followed by 17.7% (n=88) between 25 years and 29 years old and 14.9% (n=74) between 40 years and 44 years. Very few were older than 45 years or younger than 25 years.

Because of South African demographics, the racial representation indicated Blacks in the majority at 64.7% (n=321) followed by Whites, Coloureds and Indians. Interestingly, more than half of the survey respondents 58.1% (n=288) have worked in the department between 1 and 5 years with very few who worked less than a year or more than 11 years. This suggests there is limited experience among the majority of the staff employed at the GDH; and also, the majority of survey respondents who comprised 72.4% (n=359) have been working in their current position for less than two years with very few having worked more than two years in their current position.

Finally, the majority of survey respondents 67.9% (n=337) have matriculation or possess an equivalent qualification and a diploma or certificate. Very few have postgraduate degrees, such as, Honours or Masters or professional qualifications.

This indicates that, on average, the majority of survey respondents emanated from basic educational background.

### 4.6. Descriptive statistics of KM capability measures

KM as an abstract phenomenon cannot be observed directly and therefore cannot be measured directly. As discussed in Chapter Three, the study identified fifteen items or variables from the literature that are believed to represent the behaviour of KM capability. The descriptive statistics for each KM capability measures are shown below:

- Level of understanding of KM
- KM strategies operational objectives
- KM use in department
- Effectiveness in KM practices
- Knowledge creation
- Knowledge acquisition
- Knowledge retention/storage
- Knowledge share/transfer
- Knowledge transfer activities
- Knowledge application/use
- OP
- HSD
- OC
- OS
- Information technology

The results of the findings are discussed in the following pages.

### 4.6.1. Level of understanding of KM

Table 20: Level of understanding of KM

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q11a). Knowledge includes everything I know | 59.2% (292) | 15.2% (75) | 25.6% (126) | 2.40 | 1 |
| Q11b). Knowledge includes experience | 49.5% (244) | 19.5% (96) | 31.0% (153) | 2.58 | 2 |
| Q11f). The organisation strongly believes in the learning by doing concept | 58.1% (283) | 20.5% (100) | 21.3% (104) | 2.62 | 3 |
| Q11e). My knowledge is documented and available to others | 45.0% (218) | 21.3% (103) | 33.7% (163) | 2.80 | 4 |
| Q11i). A major new strategic initiative is to remain competitive | 42.6% (210) | 30.0% (148) | 27.4% (135) | 2.87 | 5 |
| Q11h). KM is a new way to add value to information in the department | 43.4% (214) | 32.3% (159) | 24.3% (120) | 2.88 | 6 |
| Q11c). Values and intuition forms part of my knowledge | 41.9% (204) | 14.2% (69) | 43.9% (214) | 2.95 | 7 |
| Q11g). My knowledge gives me a competitive advantage | 39.2% (191) | 12.9% (63) | 47.8% (233) | 2.98 | 8 |
| Q11d). My knowledge is hidden in my brain (*R) | 24.6% (120) | 11.5% (56) | 65.9% (311) | 3.39 | 9 |

The survey respondents were asked to indicate the level of agreement on 15 aspects of measuring the understanding of what is KM. “Strongly agree” and “Agree” were collapsed into those in agreement. The information is shown in Table 20.

The survey respondents demonstrated varying degrees of levels of understanding of KM with more than 50% agreeing that knowledge includes everything they know and that the organisation strongly believes in the “learning by doing” concept. The other level of understanding of KM ranging from 49.50% (n=244) to 43.4% (n=214) believed that KM includes experience, knowledge is documented and available to others, KM is a new strategic initiative to remain competitive and that KM is a new way to add value to information in the department.

However, on the other hand, 47.8% (n=233) do not believe that KM gives them a competitive advantage and 65.9% (n=311) disagreed that knowledge is hidden in their brains. This set of responses implies that KM is not universally understood at the GDH.

There is still a fair amount of confusion of the difference between information management and KM.

### 4.6.2. KM strategies operational objectives

The survey respondents were asked to indicate the existence of KM strategy, policy, plans, program or initiatives undertaken within the department. They were also asked to indicate the level of commitment by top management to KM and the training they receive and if KM was a formal function in their respective departments. The information is shown in Table 21.

All the survey respondents agreed that there is a written KM policy or strategy in place although it is something that is incorporated in the overall departmental business strategy. Also, 51.4% (253) believe that there is top management commitment and support to KM. However, the same majority 95.4% (n= 473) do not believe that the department is currently setting up any KM program.

There is an equitable divide between survey respondents who agree or disagree that the department provides training related to KM practices; that they need knowledge to carry out their work; that KM is all about intellectual capital, intellectual assets and a learning organisation and that KM is a formal function in the organisation.

Table 21: KM strategies operational objectives

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q12f). There is no stand-alone KM strategy document but it is incorporated in the department strategy. | 100.0% (496) | - | - | 2.00 | 1 |
| Q12j). The department is currently setting up a KM program in the department (*R). | 95.4% (473) | 4.6% (23) | - | 2.05 | 2 |
| Q12e). Top management promotes and is committed to KM in the organisation. | 51.4% (253) | 19.1% (94) | 29.5% (145) | 2.80 | 3 |
| Q12i). I need knowledge to carry out my work. | 40.8% (200) | 31.6% (155) | 27.5% (135) | 2.82 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| Q12n). The department provides training related to KM practices. | 39.4% (194) | 21.1% (104) | 39.4% (194) | 2.99 | 5 |
| Q12d). KM is all about intellectual capital, intellectual assets and a learning organisation. | 31.5% (155) | 37.4% (184) | 31.1% (153) | 3.01 | 6 |
| Q12c). KM is a formal function in the organisation. | 35.8% (176) | 27.4% (135) | 36.8% (181) | 3.02 | 7 |
| Q12a). The department has a written KM policy or strategy in place. | 28.5% (140) | 32.3% (159) | 39.2% (193) | 3.10 | 8 |
| Q12k). KM initiatives have been started and then abandoned (*R). | 41.9% (208) | 16.3% (81) | 41.7% (207) | 3.10 | 9 |
| Q12b). A formal knowledge plan exists in the organisation. | 25.8% (126) | 27.7% (135) | 46.5% (227) | 3.23 | 10 |
| Q12l). The department has a value system or program intended to promote knowledge-sharing. | 31.9% (157) | 25.8% (127) | 42.3% (208) | 3.23 | 11 |
| Q12s). There is documentation such as lessons learnt, training manuals, good work practices, articles for publication, etc. (organisation memory. | 29.3% (144) | 26.6% (131) | 44.1% (217) | 3.26 | 12 |
| Q12p). The department use and supports formal mentoring practices, including apprenticeship. | 24.8% (122) | 27.0% (133) | 48.2% (237) | 3.36 | 13 |
| Q12m). The department has policies or programs intended to improve worker retention. | 16.3% (80) | 34.7% (170) | 49.0% (240) | 3.40 | 14 |
| Q12h). There is a KM program in place in the department. | 22.9% (112) | 21.2% (104) | 55.9% (274) | 3.48 | 15 |
| Q12h). There is a KM program in place in the department. | 22.9% (112) | 21.2% (104) | 55.9% (274) | 3.48 | 15 |
| Q12q). The department offers off-site training to employees in order to enrich their knowledge base and skills. | 20.9% (103) | 30.1% (148) | 49.0% (241) | 3.48 | 16 |
| Q12o). I have received informal training related to KM. | 12.6% (62) | 24.4% (120) | 63.0% (310) | 3.63 | 17 |
| Q12r). The department regularly up2dates database/repository of good work practices, lessons learnt or listings of experts. | 12.6% (62) | 16.7% (82) | 70.7% (248) | 3.80 | 18 |
| Q12g). There is no written strategy and the department has not initiated KM practices (*R). | - | - | 100.0% (496) | 4.00 | 19 |

On the other hand, 46.5% (n=227) disagreed that there exists a formal KM plan in place in the organisation. There does not seem to be the agreement from some of the survey respondents 48.2% (n=237) that the department uses and supports the use of

formal mentoring including apprenticeship programs. There also a contradictory view from 55.9% (n=274) of the survey respondents that there is no KM program in the department and 49% (n=241) believe that the department does not provide training to employees in order to enrich their knowledge base and skills.

Likewise, there is a view that some 63% (n=310) survey respondents have not received any informal training related to KM and 70.7% (n=248) believed that that the department does not regularly update a database/repository of good work practices, lessons learnt, or listings of experts. The ramifications are that even if there is some mention of KM in the department's strategy documents, there has been abject neglect of KM program implementation in the department and there is no training or departmental support of such a program.

### 4.6.3. Knowledge Management use in the department

The survey respondents were asked to indicate the level of importance of the use of KM in the department. The information is shown in Table 22.

The majority of survey respondents 52.1% (n=255) think that there is a high-level of importance in the use of KM in the department to identify and/or protect the presence, in the department, of strategic knowledge. There was a general agreement, with minimal dissent, that there is a high-level of importance in the use of KM to increase employee acceptance of innovation; to protect the department from loss of knowledge due to the departure of employees; to improve the competitive advantage of the department; to increase efficiency by using knowledge to improve HSD processes; to improve employee retention; to help integrate knowledge within the department; and to improve sharing or transferring knowledge with other employees.

Table 22: KM use in the department

| Statement | Level of importance | | | Mean | Rank |
|---|---|---|---|---|---|
| | Important | Somewhat important | Not important | | |
| Q13j). To identify and/or protect strategic knowledge present in the department. | 52.1% (255) | 28.6% (140) | 19.2% (94) | 2.55 | 1 |
| Q13h). To increase employee acceptance of innovation. | 41.7% (203) | 46.4% (226) | 11.9% (58) | 2.64 | 2 |
| Q13f). To protect the department from loss of knowledge due to employees' departure. | 46.0% (225) | 34.4% (168) | 19.6% (96) | 2.69 | 3 |
| Q13a). To improve the competitive advantage of the department. | 54.2% (265) | 20.7% (101) | 25.2% (123) | 2.7 | 4 |
| Q13e). To increase efficiency by using knowledge to improve HSD processes. | 42.7% (209) | 28.6% (140) | 28.6% (140) | 2.81 | 5 |
| Q13g). To train employees to meet strategic objectives of the department. | 37.0% (181) | 40.1% (196) | 22.9% (112) | 2.82 | 6 |
| Q13i). To improve employee retention. | 42.6% (208) | 24.8% (121) | 32.6% (159) | 2.89 | 7 |
| Q13b). To help integrate knowledge within the department. | 40.7% (198) | 28.1% (137) | 31.3% (152) | 2.94 | 8 |
| Q13d). To improve sharing or transferring knowledge with other employees in the department. | 35.0% (171) | 31.9% (156) | 33.1% (162) | 2.97 | 9 |
| Q13c). To improve the capture and use of knowledge from sources outside the department. | 39.7% (194) | 21.7% (106) | 38.6% (189) | 3.07 | 10 |

### 4.6.4. Effectiveness of KM practices

The survey respondents were asked to indicate the effectiveness of KM practices in increasing adaptation of service, improving skills of employees, increasing knowledge-sharing vertically and horizontally and increasing flexibility in HSD. The information is shown in Table 23.

The majority of survey respondents ranging from 81% (n=397) to 61.8% (n=303) agreed with the level of the effectiveness of KM practices in increasing adaptation of service; improvement of skills of employees, increasing knowledge-sharing vertically and horizontally; increasing the flexibility of HSD; improvement in corporate

organisation memory; improvement in relationships with healthcare services recipients; and improvement in employee efficiency or productivity.

Table 23: Effectiveness of KM practices

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Effective | Somewhat effective | Not effective | | |
| Q14g). Increase our adaptation of service to citizens' requirements and needs. | 81.0% (397) | 14.1% (69) | 4.9% (24) | 1.94 | 1 |
| Q14d). Improve skills and knowledge of employees. | 76.6% (377) | 18.3% (90) | 5.1% (25) | 2.03 | 2 |
| Q14a). Increase our knowledge-sharing horizontally (across departments, functions or business units). | 76.2% (374) | 18.7% (92) | 4.1% (25) | 2.07 | 3 |
| Q14h). Increase flexibility in HSD and innovation. | 75.9% (372) | 19.4% (95) | 4.7% (23) | 2.07 | 4 |
| Q14b). Increase our knowledge-sharing vertically (up the department hierarchy). | 68.0% (333) | 24.1% (118) | 8.0% (39) | 2.09 | 4 |
| Q14j). Improve our corporate organisation memory. | 70.0% (343) | 23.9% (117) | 6.1% (30) | 2.09 | 6 |
| Q14e). Improve relationships with healthcare services recipients. | 72.4% (355) | 22.0% (108) | 5.5% (27) | 2.12 | 7 |
| Q14k). Increase our ability to capture knowledge from public research institutions including universities and government laboratories (establishments). | 63.3% (310) | 30.2% (148) | 6.5% (32) | 2.29 | 7 |
| Q14c). Improve employee efficiency or productivity. | 61.8% (303) | 20.2% (99) | 18.0% (88) | 2.34 | 9 |
| Q14f). Help us add new healthcare services. | 48.4% (237) | 32.7% (160) | 19.0% (93) | 2.56 | 10 |
| Q14i). Prevent duplicate research and development. | 48.8% (239) | 27.1% (133) | 24.1% (118) | 2.67 | 11 |

The assumptions from this are that the employees see the effectiveness and benefits of using KM in improving healthcare services, employee skills, relationships with stakeholders and increase in sharing knowledge across departments. The implications

are that employees acknowledge the importance of the use of KM practices in the department.

### 4.6.5. Knowledge creation

The survey respondents were asked to indicate their level of agreement with the practice of creation of knowledge in the department. The information is shown in Table 24.

Table 24: Knowledge creation

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q15i). The department is open to new ideas and insights to redesigning work processes and design. | 65.3% (322) | 13.0% (64) | 21.7% (107) | 2.49 | 1 |
| Q15e). I have access to both local and international standards and working procedures. | 50.4% (247) | 29.4% (144) | 20.2% (89) | 2.62 | 2 |
| Q15j). Employees have an opportunity to work on new projects and programs, depending on their experience, qualifications and availability. | 57.0% (281) | 18.3% (90) | 24.7% (122) | 2.62 | 3 |
| Q15f). The company offers a learning environment which facilitates innovation. | 52.0% (256) | 11.0% (54) | 37.0% (182) | 2.67 | 4 |
| Q15a). New team members are allowed time to assimilate the knowledge that has been created. | 52.6% (259) | 15.7% (77) | 31.7% (156) | 2.75 | 5 |
| Q15k). Developing new knowledge and testing new ideas is assessed and rewarded in my department. | 47.9% (216) | 24.1% (119) | 28.0% (138) | 2.78 | 6 |
| Q15h). We regularly discuss problems, failures, and doubts in my team and organisation. | 48.5% (239) | 12.4% (61) | 39.1% (293) | 2.81 | 7 |
| Q15d). Mentoring of new team members is encouraged. | 47.9% (234) | 19.0% (93) | 33.1% (162) | 2.82 | 8 |
| Q15b). I regularly attend conferences/ workshops/seminars related to my field of expertise. | 44.4% (219) | 21.5% (106) | 34.1% (168) | 2.86 | 9 |
| Q15c). I interact regularly with a wide network of contacts within my field. | 47.6% (233) | 16.2% (79) | 36.2% (177) | 2.86 | 10 |

| | | | | | |
|---|---|---|---|---|---|
| Q15g). My performance is assessed regularly by my immediate supervisor and corrective measures to improve my performance are discussed. | 42.6% (230) | 15.4% (76) | 42.0% (207) | 2.97 | 11 |
| Q15m). In my department, important issues are explored, using scenarios or simulation techniques. | 36.3% (278) | 29.4% (144) | 34.3% (168) | 2.99 | 12 |
| Q15o). The department use mentoring, coaching, job rotation and community of practice for knowledge creation. | 33.4% (163) | 32.8% (160) | 33.8% (165) | 3.05 | 13 |
| Q15l). The department encourages learning groups, where members can discuss their work experiences and strategies. | 33.3% (164) | 28.0% (138) | 38.7% (191) | 3.1 | 14 |
| Q15n). Management information systems, Internet, Intranet, knowledge repository tools are used for knowledge creation. | 18.5% (90) | 41.1% (200) | 40.5% (197) | 3.3 | 15 |

There was a general agreement from survey respondents ranging from 63.5% (n=322) to 52.6% (n=259) about the high level of the practice of knowledge creation in that the department is open to new ideas and insights to redesigning work processes and design and employees having access to both local and international standards and working procedures. Depending on their experience, qualifications and availability, they have the opportunities to work on new projects and programs, the company offers a learning environment that facilitates innovation and new team members are allowed time to assimilate the knowledge that has been created.

There was equally a fair amount of neutral responses and disagreement about the level of the practice of knowledge creation relating to the use of management information systems, Internet, Intranet and that knowledge repository tools are used for knowledge creation 41% (n=200) and 40.5% (n=197), respectively. Nevertheless, the responses were fairly balanced regarding the level of how the practice of knowledge creation coupled to the development of new knowledge and the testing of new ideas is assessed and rewarded in participants' departments.

The regular discussion of problems, failures and doubts in particular teams and organisations was mentioned. The mentoring of new team members was encouraged. Also mentioned were attending conferences/workshops/seminars related to particular

fields of expertise and the regular interaction with a wide network of contacts within particular fields. Regular performance assessment by immediate supervisors and corrective measures to improve performance were discussed.

Important issues were explored, using scenarios or simulation techniques. Also mentioned were the use of mentoring, coaching, job rotation and community of practice for knowledge creation, the encouragement of learning groups and an environment where members can discuss their work experiences and strategies. The assumption is that there exists a fair amount of knowledge creation in the department, using various mechanisms, like working on new projects, using technology and the mentoring, coaching, job rotation and COP practices.

### 4.6.6. Knowledge acquisition

The survey respondents were asked to indicate their level of agreement with the practice of acquisition of knowledge in the department. The information is shown in Table 25.

A large majority 97% (n=474) of survey respondents agreed that with the levels of the practice of acquisition of knowledge in the department they are adequately trained to carry out their daily duties and that the documents providing information regarding new knowledge created are periodically circulated in the team. However, a large number ranging from 58% (n=286) to 61.7% (n=304) do not agree that employees are encouraged to be part of external professional networks and associations. Nor do they agree that competitors inspire them to develop new methods and approaches to delivering training, or that the organisation does not do research to explore future possibilities and new knowledge.

While some remain neutral, a fair number of survey respondents agree and appreciate that the lessons learnt are sent to them in their areas of responsibility and that the culture of learning from each other, due to long serving/experienced employees, exists in the department and that they are appropriated to enhance the knowledge base of the team.

Table 25: Knowledge acquisition

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q16a). I am adequately trained to carry out my daily duties. | 96.0% (474) | 2.4% (12) | 1.6% (8) | 1.95 | 1 |
| Q16e). Documents providing information regarding new knowledge created are periodically circulated in the team. | 68.0% (335) | 19.9% (98) | 12.2% (60) | 2.4 | 2 |
| Q16g). I appreciate lessons learnt sent to me in my area of responsibility. | 47.3% (233) | 48.7% (240) | 4.1% (20) | 2.46 | 3 |
| Q16b). The culture of learning from each other exists in the department. | 34.7% (171) | 49.3% (243) | 16.0% (79) | 2.69 | 4 |
| Q16c). Long serving/experienced employees are used to enhance the knowledge base of the team. | 50.9% (251) | 21.3% (105) | 27.8% (137) | 2.7 | 5 |
| Q16i). In this organisation, we collect information about the needs and wishes of our customers. | 42.6% (209) | 20.8% (102) | 36.6% (180) | 2.89 | 6 |
| Q16j). If important knowledge is not available, my institution buys it, e.g. standards, journals, research reports. | 38.8% (191) | 25.2% (124) | 36.0% (179) | 2.91 | 6 |
| Q16k). Our organisation/institution employs new staff members who possess the missing knowledge when required. | 34.3% (169) | 33.9% (167) | 31.8% (157) | 2.94 | 8 |
| Q16f). The data and information are disseminated on a regular basis through both electronic and traditional information channels. | 32.0% (158) | 26.8% (132) | 41.2% (203) | 3.06 | 9 |
| Q16m). Employees attend courses, training programs and seminars to remain up to date. | 33.5% (165) | 17.2% (85) | 49.3% (243) | 3.08 | 10 |
| Q16h). Employees are encouraged to be part of external professional networks and associations. | 30.2% (149) | 16.2% (80) | 53.5% (264) | 3.17 | 11 |
| Q16n). Our competitors inspire us to develop new methods and approaches to delivering training. | 29.4% (145) | 12.6% (62) | 58.0% (286) | 3.21 | 12 |
| Q16l). Our organisation does research to explore future possibilities and new knowledge. | 24.7% (122) | 23.3% (115) | 51.9% (256) | 3.25 | 13 |
| Q16d). I have an opportunity to do other related jobs in the department to enhance my knowledge (job rotation). | 25.8% (127) | 12.6% (62) | 61.7% (304) | 3.32 | 14 |

### 4.6.7. Knowledge retention/storage

The survey respondents were asked to indicate their level of agreement with the practice of retention/storage of knowledge in the department. The information is shown in Table 26.

The majority of the survey respondents viewed positively the level at which the retention/storage of knowledge is exercised in the department. They agreed that retirements negatively affect KM in the organisation. They also agreed that changes in procedures, handbooks, etc. are communicated throughout the organisation and are corrected by team members.

They furthermore agreed that the employees use handbooks and work guidelines that are up to date; that knowledge assets (e.g. customer details) are stored and preserved and that the organisation has documented specific knowledge and skills of individuals.

However, the majority of survey respondents disagreed with the following issues: that the organisation reviews failures and successes, that lessons learnt are set down, that they have ICT infrastructure to access and store lessons learnt and that information in general and project learning (success or failures) and that reports are accessible and available to other team members.

The deductions that can be deduced from the employees' views are that, although there is some dissatisfaction from some employees for failure as a result of lack of access or availability of stored or retained knowledge, there exists some knowledge retention practice in the department

Table 26: Knowledge retention/storage

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q17l). Retirements negatively affect knowledge management in the organisation. | 73.1% (344) | 15.5% (75) | 11.4% (55) | 2.15 | 1 |
| Q17i). Changes in procedures, handbooks, etc. are communicated throughout the organisation to the correct team members. | 65.9% (325) | 18.3% (90) | 15.8% (78) | 2.44 | 2 |
| Q17h). We use handbooks and work guidelines, which are up to date. | 61.1% (301) | 23.1% (114) | 15.8% (78) | 2.51 | 3 |
| Q17e). Knowledge assets (e.g. customer details) are stored and preserved. | 36.3% (179) | 61.1% (301) | 2.6% (13) | 2.6 | 4 |
| Q17j). Our organisation has documented specific knowledge and skills of individuals. | 53.8% (265) | 23.7% (117) | 22.5% (111) | 2.68 | 5 |
| Q17d). Departmental operational policies/procedures/work manuals are located in a central place accessible to all members of staff. | 46.7% (230) | 20.1% (99) | 33.3% (164) | 2.85 | 6 |
| Q17f). In our organisation, we use brainstorming sessions to find solutions for problems. | 22.9% (113) | 64.9% (320) | 12.2% (60) | 2.89 | 7 |
| Q17k). Experts in our organisation are encouraged to make explicit the methods they use in a step-by-step description. | 35.9% (177) | 29.6% (146) | 34.5$ (170) | 2.97 | 8 |
| Q17m). The department use job rotation, mentorship, coaching, and community of practice, discussion forums, job rotation, job promotion, and knowledge repository for knowledge retention. | 32.3% (160) | 24.6% (122) | 43.1% (214) | 3.08 | 9 |
| Q17a). Databases/centralised knowledge repository of good work practices, lessons learnt are available and updated in the department. | 29.4% (145) | 23.3% (115) | 47.3% (233) | 3.21 | 10 |
| Q17g). In our organisation, we review failures and successes and lessons learnt are set down. | 27.6% (136) | 15.8% (78) | 56.6% (279) | 3.26 | 11 |
| Q17c). We have ICT infrastructure to access and store lessons learnt and information in general. | 24.5% (121) | 25.2% (124) | 50.3% (248) | 3.3 | 12 |
| Q17b). Project learning (success or failures). Reports are accessible and available to other team members. | 20.4% (100) | 26.5% (130) | 53.1% (260) | 3.38 | 13 |

### 4.6.8. Knowledge share/transfer

The survey respondents were asked to indicate their level agreement with the practice of knowledge share/transfer in the department. The information is shown in Table 27.

Table 27: Knowledge share/transfer

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q18b). I often share my work-related knowledge with other team members. | 81.9% (404) | 10.8% (53) | 0.6% (36) | 2.08 | 1 |
| Q18n). Senior managers in the department often share operational knowledge with employees to help them carry out their work. | 73.6% (363) | 16.4% (81) | 9.9% (49) | 2.18 | 2 |
| Q18o). There is generally a free flow of information in the department. | 70.4% (347) | 17.6% (87) | 12.0% (59) | 2.2 | 3 |
| Q18a). Work related knowledge is my personal competitive advantage. | 78.5% (387) | 13.6% (67) | 7.9% (39) | 2.21 | 4 |
| Q18p). The perception of sharing knowledge in the department is that it facilitates the completion of tasks, accomplishes tasks quickly, improves job performance, and speeds up decision-making. | 72.7% (354) | 19.5% (95) | 7.8% (38) | 2.23 | 5 |
| Q18j). We have meetings at which professional matters are discussed regularly. | 66.8% (330) | 21.9% (108) | 11.3% (56) | 2.41 | 6 |
| Q18c). We have a budget for professional development and training in our department. | 54.2% (267) | 41.0% (202) | 4.9% (24) | 2.43 | 7 |
| Q18i). A lot of knowledge is distributed in informal ways outside the office settings, e.g. in the corridors, tea-rooms, etc. | 67.2% (332) | 18.6% (92) | 14.2% (70) | 2.45 | 8 |
| Q18r). The regular activities/tasks that I perform help me to share my experience/knowledge with other members in the department. | 63.6% (308) | 21.1% (102) | 15.2% (74) | 2.45 | 9 |
| Q18k). Colleagues regularly share positive experiences and successful projects undertaken. | 62.3% (308) | 23.5% (116) | 14.2% (70) | 2.52 | 10 |
| Q18q). The specific knowledge that need is found only among experts in the department rather than in the central location. | 63.2% (308) | 20.7% (101) | 16.0% (78) | 2.52 | 11 |
| Q18g). Resignations are the main inhibitors to knowledge transfer in the department. | 36.9% (180) | 41.4% (202) | 21.7% (106) | 2.9 | 12 |

| | | | | | |
|---|---|---|---|---|---|
| Q18d). We have a technological infrastructure to promote a knowledge-sharing environment within our department. | 29.2% (144) | 37.1% (183) | 36.7% (166) | 3.07 | 13 |
| Q18e). I am willing to share my knowledge and experience with others. | 20.1% (98) | 44.5% (217) | 35.5% (173) | 3.23 | 14 |
| Q18h). New members of staff are assigned to mentors who help them to find their way in the department. | 16.2% (80) | 23.9% (118) | 59.9% (296) | 3.42 | 15 |
| Q18f). I am rewarded for sharing my knowledge with others. | 18.0% (88) | 24.6% (120) | 57.4% (280) | 3.43 | 16 |
| Q18m). There are opportunities for job rotation based on one's know-how, thereby ensuring knowledge distribution. | 13.5% (66) | 21.9% (108) | 64.8% (320) | 3.54 | 17 |
| Q18l). We have a peer review system which allows opportunities for discussing work methodologies. | 14.6% (72) | 10.6% (52) | 74.8% (368) | 3.61 | 18 |

There was general agreement from the survey respondents ranging from 81.9% (404) to 63.2% (308) who viewed positively the level at which the sharing and transfer of knowledge is practised in the department. They agreed that they often share their work-related knowledge with other team members, that senior managers often share operational knowledge with employees to help them carry out their work and that there is generally a free flow of information in the department.

Work-related knowledge is their personal competitive advantage. The general perception of sharing knowledge in the department is that it facilitates the completion of tasks, accomplishes tasks quickly, improves job performance and accelerates decision making. There are meetings at which professional matters are regularly discussed. Employees have budgets for professional development and training in their departments; A great deal of knowledge is distributed in informal ways outside the office settings, e.g. in the corridors, tea-rooms, etc. The regular activities/tasks that they perform help them to share their experience/knowledge with other members in the department. Colleagues regularly share positive experiences and successful projects undertaken. The specific knowledge that is needed is found only among experts in the department rather than in the central location.

However, on the negative side, the survey respondents believe that new members of staff are not assigned to mentors who could assist with the departmental orientation.

They are not rewarded for sharing their knowledge with others. There are no opportunities for job rotation based on one's know-how, thereby ensuring knowledge distribution. They have no peer review system that allows opportunities for discussing work methodologies.

### 4.6.9. Knowledge transfer activities

The survey respondents were asked to indicate their level of agreement with the knowledge transfer activities in the department. The information is shown in Table 28 .

Table 28: Knowledge transfer activities

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | To a large extent | To some extent | To a little extent | | |
| Q19j). I am willing to share my knowledge and new ideas with other co-workers. | 60.6% (298) | 25.6% (126) | 13.8% (68) | 2.52 | 1 |
| Q19p). I feel loss of power and security about my job when I share my knowledge (*R). | 37.0% (183) | 34.8% (172) | 28.1% (139) | 2.78 | 2 |
| Q19s). My interaction with co-workers affects the sharing of your knowledge with them in a positive manner. | 48.6% (239) | 25.4% (125) | 26.0% (128) | 2.79 | 3 |
| Q19g). Mentorship, formal and informal. | 41.3% (203) | 28.1% (138) | 30.5% (150) | 2.88 | 4 |
| Q19q). I need to have to trust my co-workers first before I share my knowledge (*R). | 31.0% (153) | 34.0% (168) | 35.0% (173) | 2.96 | 5 |
| Q19b). Communities of practice. | 37.0% (182) | 30.1% (148) | 32.9% (162) | 2.98 | 6 |
| Q19f). Orientation, general and job specific. | 36.2% (177) | 29.4% (144) | 34.4% (168) | 3 | 7 |
| Q19c). Coaching. | 34.6% (170) | 31.7% (156) | 33.7% (166) | 3.05 | 8 |
| Q19d). Knowledge repositories. | 32.3% (158) | 30.9% (151) | 36.8% (180) | 3.11 | 9 |
| Q19e). Storytelling. | 32.6% (160) | 28.7% (141) | 38.7% (190) | 3.11 | 10 |
| Q19a). Succession planning. | 32.3% (159) | 21.3% (105) | 46.5% (229) | 3.13 | 11 |

| | | | | | |
|---|---|---|---|---|---|
| Q19r). I share my knowledge with co-workers who have helped me in the past (*R). | 32.9% (162) | 25.6% (126) | 41.5% (204) | 3.17 | 12 |
| Q19k). My manager encourages the sharing of knowledge among team members. | 30.7% (251) | 28.7% (141) | 40.7% (200) | 3.23 | 13 |
| Q19t). My company invests in technology to promote the sharing of knowledge. | 28.3% (139) | 25.0% (123) | 46.7% (230) | 3.32 | 14 |
| Q19m). My manager helps me to find solutions to difficult problems. | 30.9% (152) | 26.4% (130) | 42.7% (210) | 3.33 | 15 |
| Q19h). Discussion forums are organised in the department/organisation on time basis in order to encourage people' knowledge transfer. | 23.4% (115) | 30.7% (151) | 45.9% (226) | 3.38 | 16 |
| Q19i). Knowledge-sharing is practised and emphasised in our company. | 17.1% (84) | 34.7% (170) | 48.2% (236) | 3.38 | 17 |
| Q19l). My organisation provides the opportunity for employees to share their knowledge. | 17.5% (86) | 32.5% (160) | 50.0% (246) | 3.41 | 18 |
| Q19o). I feel appreciated when I have invested my time and energy in the sharing of knowledge. | 19.9% (98) | 25.2% (124) | 54.9% (270) | 3.45 | 19 |
| Q19n). The rewards I receive are proportionate to my contribution. | 16.7% (82) | 19.5% (96) | 63.8% (314) | 3.7 | 20 |

The majority 60.6% (n=298) of survey respondents indicated that they are willing to share their knowledge and new ideas with other co-workers. However, the same majority ranging from 50% (n=246) to 63% (n=314) indicated that the organisation does not provide the opportunity for employees to share their knowledge and that they do not feel appreciated when they have invested their time and energy in the sharing of knowledge; and that the rewards they receive are not proportionate to their contribution. The consequences could be a withdrawal of the willingness of employees if the department does not create a knowledge-sharing culture.

Whereas, there is also a huge number of survey respondents that is spread evenly amongst their levels of agreement who feel the loss of power and security about their job when they share their knowledge. Their interaction with co-workers affects the sharing of their knowledge with them in a positive manner. They need to trust their co-workers first before they share their knowledge. The following was mentioned: the existence of knowledge-sharing platforms/mechanisms (communities of practice, job

orientation, coaching, knowledge repositories, storytelling and succession planning). They share their knowledge with co-workers who have helped them in the past; the manager encourages the sharing of knowledge among team members. The inferences from the above views are that the OC could be a barrier to the sharing of knowledge.

Table 29: Knowledge application/use

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q20a). I am able to use and apply the knowledge I have acquired from training sessions etc. | 65.4% (322) | 24.4% (120) | 10.2% (50) | 2.34 | 1 |
| Q20b). Remote teams are supported adequately in terms of access to knowledge and networks. | 41.8% (215) | 35.0% (172) | 23.2% (114) | 2.77 | 2 |
| Q20f). Experiences and feedback of customers is used to improve our service delivery. | 41.8% (205) | 30.2% (148) | 28.0% (217) | 2.8 | 3 |
| Q20g). The existing know-how currently in the organisation is used in a creative manner in new applications. | 44.3% (217) | 23.9% (117) | 31.8% (156) | 2.84 | 4 |
| Q20h). Employees promote new knowledge internally within the organisation. | 42.7% (210) | 28.9% (142) | 28.5% (140) | 2.84 | 4 |
| Q20i). One of our strong qualities is combining our specialisations in multi-disciplinary teams or community of practice. | 40.9% (201) | 32.1% (158) | 27.0% (133) | 2.84 | 6 |
| Q20e). New knowledge is being promoted externally in the market through the dissemination of research findings. | 34.0% (167) | 34.4% (169) | 31.6% (155) | 2.9 | 7 |
| Q20d). Selling knowledge, such as through consultancies, attracts explicit attention from our institution. | 30.4% (149) | 36.9% (181) | 32.6% (160) | 2.97 | 7 |
| Q20c). Knowledge is applied and shared successfully across all departments. | 30.0% (147) | 33.3% (163) | 26.7% (180) | 3.03 | 9 |
| Q20j). We have a system to eliminate dysfunctional beliefs and attitudes at our organisation. | 30.5% (150) | 34.3% (169) | 35.2% (173) | 3.03 | 10 |

The other view is that the organisation invests in technology to promote the sharing of knowledge; managers help employees to find solutions to difficult problems; discussion forums are organised in the department/organisation on time basis in order

to encourage people' knowledge transfer; and knowledge-sharing is practised and emphasised in the department.

### 4.6.10. Knowledge application/use

The survey respondents were asked to indicate their level of agreement with the knowledge application/use practices in the department. The information is shown in Table 29. Only 65.4% (n=322) of the survey respondents indicated their agreement with the high-level knowledge application/use practices in the department by indicating that they are able to use and apply the knowledge they have acquired from training sessions, etc. There was very little disagreement but there was a huge number of survey respondents spread evenly amongst the level of agreement to knowledge application/use practices in the department.

### 4.6.11. Organisational performance

The survey respondents were asked to indicate their level of agreement with the performance within the department as a whole. The information is shown in Table 30.

Table 30: Organisational Performance

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q21j). The department's image is seen in a positive light. | 58.6% (286) | 17.0% (83) | 24.6% (119) | 2.55 | 1 |
| Q21f). Training programs are provided to employees. | 42.0% (205) | 29.3% (143) | 28.7% (140) | 2.87 | 2 |
| Q21o). The department offers effective developmental programs for poor performers to enhance their performance at work. | 41.2% (202) | 24.3% (119) | 34.5% (169) | 2.89 | 3 |
| Q21n). The line manager at the department continuously monitors the performance of the employees against set targets. | 40.8% (200) | 27.6% (135) | 31.6% (155) | 2.91 | 4 |
| Q21a). Strategic goals of the department are explained to employees. | 36.0% (177) | 34.3% (169) | 29.7% (146) | 3 | 5 |
| Q21k). The department's procedures were followed easily to achieve goals. | 36.7% (180) | 28.8% (141) | 34.5% (169) | 3 | 6 |

| | | | | | |
|---|---|---|---|---|---|
| Q21d). The employees understand the broad objectives of the department's healthcare strategy. | 37.8% (185) | 23.9% (117) | 38.4% (188) | 3.04 | 7 |
| Q21m). As an employee at the department, I am happy with the key performance objectives that are set. | 34.9% (171) | 26.3% (129) | 38.8% (190) | 3.05 | 8 |
| Q21e). The employees are aware of the key success factors of the department and healthcare strategy. | 34.5% (169) | 28.8% (141) | 36.7% (180) | 3.07 | 9 |
| Q21c). The department's vision and mission are aligned with employees' performance measurements. | 26.8% (132) | 32.9% (162) | 40.2% (198) | 3.17 | 10 |
| Q21h). Employees are always motivated with good team spirit. | 27.6% (135) | 32.9% (161) | 39.6% (194) | 3.21 | 11 |
| Q21q). At the department, employees are evaluated fairly without any bias. | 30.6% (150) | 25.1% (123) | 44.3% (217) | 3.22 | 12 |
| Q21l). The department meets citizens' healthcare needs. | 23.0% (112) | 36.1% (176) | 41.0% (200) | 3.24 | 13 |
| Q21b). The department's employees participate in setting the strategic goals of the department. | 28.0% (138) | 23.6% (116) | 48.4% (238) | 3.26 | 14 |
| Q21i). The department's financial performance targets are achieved. | 27.8% (136) | 27.3% (134) | 44.9% (220) | 3.27 | 15 |
| Q21g). Performance of this organisation has been excellent in meeting its goals. | 23.3% (114) | 30.0% (147) | 46.7% (259) | 3.36 | 16 |
| Q21p). At the department, every employee's performance is evaluated regularly. | 18.0% (88) | 28.0% (137) | 54.1% (265) | 3.46 | 17 |
| Q21r). As an employee at the department, I am happy with my evaluation performance rating. | 17.2% (84) | 33.0% (161) | 49.8% (243) | 3.46 | 18 |
| Q21s). The department offers rewards to employees who meet their set goals to motivate them. | 15.7% (77) | 26.9% (132) | 57.3% (281) | 3.59 | 19 |

The survey respondents believe that the department is seen in a positive light. This is demonstrated by 58.6% (n=286) who agreed. However, the survey respondents' views are fairly balanced with a tendency to more disagreeing regarding the following: the availability of training programs provided to employees; effective developmental programs for poor performers to enhance their performance at work; the line manager at the department continuously monitors the performance of the employees against set targets; strategic goals of the department are explained to employees; the

department's procedures were followed easily to achieve goals; the employees understanding of the broad objectives of the department's healthcare strategy; employee are happy with the key performance objectives that are set; the employees are aware of the key success factors of the department and healthcare strategy; the department's vision and mission are aligned with employees' performance measurements; employees are always motivated with good team spirit; and employees are evaluated fairly without any bias.

There was huge disagreement that in the department, every employee's performance is regularly evaluated. Also, the view of the majority of the survey respondents 57.3% (n=281) is that the department does not offer motivational rewards to employees who meet their set goals. and 54.1% (n=265) believe that employee's performance is not regularly evaluated. The consequences could be that employees will see no need to go the extra mile and improve their individual performance. This might have a negative impact on the overall OP.

### 4.6.12. Healthcare service delivery

The survey respondents were asked to indicate their level of agreement with the levels of good productivity and HSD in the department. The information is shown in Table 31.

Fewer than half of the survey respondents supported the view that the department had good productivity levels ratings and good service delivery ratings before the major public-sector reform initiatives in 1994 and additionally the view that the department executes research among public healthcare users before new healthcare services are introduced. However, an almost equal number of survey respondents disagreed with these views. There was also an almost equal number of survey respondents who expressed no opinion. These results tell us that there is generally a fair amount of uncertainty within the department regarding issues of productivity, OP and HSD.

Table 31: Healthcare service delivery

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q22b). The department had good productivity levels ratings before the 1994 major public-sector reform initiatives. | 41.6% (204) | 33.7% (165) | 24.7% (121) | 2.8 | 1 |
| Q22c). The department achieves daily healthcare service targets. | 45.3% (223) | 30.5% (150) | 24.2% (119) | 2.8 | 2 |
| Q22a). The department had a good service delivery rating before the major public-sector reform initiatives in 1994. | 43.1% (211) | 30.4% (149) | 26.5% (130) | 2.85 | 3 |
| Q22d). We carry out market research among public healthcare users before we introduce new healthcare services to the market. | 31.9% (157) | 36.8% (181) | 31.3% (154) | 3.04 | 4 |

### 4.6.13. Organisational culture

The survey respondents were asked to indicate their level of agreement with the existence of an OC for KM at the GDH. The information is shown Table 32.

Table 32: Organisational culture

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q23l). There is scope to develop skills and abilities. | 75.2% (366) | 19.1% (93) | 5.7% (28) | 2.29 | 1 |
| Q23q). I have a good relationship with my co-workers. | 59.1% (290) | 38.7% (190) | 2.2% (11) | 2.33 | 2 |
| Q23p). Promotions are on the basis of qualification and experience. | 56.0% (275) | 38.3% (188) | 5.7% (28) | 2.37 | 3 |
| Q23j). The employees hold formal staff meetings at the department. | 54.5% (266) | 34.4% (168) | 10.1% (54) | 2.53 | 4 |
| Q23a). The relationship I have with my boss help in the flow of information. | 59.8% (293) | 21.2% (104) | 19.0% (93) | 2.56 | 5 |
| Q23c). Management in the department encourage people to reflect on information and data, and reframe these at the strategic level. | 51.6% (251) | 29.0% (141) | 19.3% (94) | 2.6 | 6 |

| | | | | | |
|---|---|---|---|---|---|
| Q23d). Employees are encouraged to exchange information and knowledge for solving problems in the department. | 54.1% (263) | 26.5% (129) | 19.3% (94) | 2.6 | 7 |
| Q23i). To do my work when I am stuck - I often consult colleagues from other business units. | 50.0% (245) | 37.6% (184) | 12.4% (61) | 2.63 | 8 |
| Q23f). To do my work when I am stuck - I often consult my business unit manager. | 47.2% (231) | 38.4% (188) | 12.3% (70) | 2.68 | 9 |
| Q23h). To do my work when I am stuck - I often consult other business units within the department. | 48.0% (235) | 35.7% (175) | 16.3% (80) | 2.73 | 10 |
| Q23g). To do my work when I am stuck - I often make use of the documented procedures within the department. | 46.9% (230) | 35.5% (174) | 17.6% (86) | 2.75 | 11 |
| Q23r). My supervisor offers constructive feedback and comments in my performance review. | 31.6% (155) | 33.4% (164) | 35.0% (172) | 2.96 | 12 |
| Q23v). The department's culture is conducive to spending time with colleagues and meeting people. | 35.6% (175) | 24.4% (120) | 39.9% (196) | 2.96 | 13 |
| Q23t). I have the authority to carry out the responsibility assigned to me. | 31.4% (154) | 18.7% (92) | 49.9% (245) | 3.08 | 14 |
| Q23s). There is good communication within the company. | 32.0% (157) | 18.5% (91) | 49.5% (243) | 3.09 | 15 |
| Q23u). My work environment is satisfactory. | 28.3% (139) | 23.6% (116) | 40.1% (236) | 3.1 | 16 |
| Q23b). I need to pass through my superiors in the office whenever information is sought (*R). | 21.1% (104) | 36.8% (181) | 42.1% (207) | 3.2 | 17 |
| Q23w). There is a platform and culture that enables me to freely share information with others in the organisation. | 22.9% (113) | 27.8% (137) | 49.3% (243) | 3.22 | 18 |
| Q23m). I receive formal evaluation of my work. | 23.0% (112) | 28.7% (140) | 48.3% (235) | 3.26 | 19 |
| Q23k). The department has a knowledge management department. | 23.7% (115) | 9.3% (45) | 67.1% (326) | 3.38 | 20 |
| Q23n). I receive in-service training on continual bases. | 20.1% (98) | 19.9% (97) | 60.0% (292) | 3.41 | 21 |
| Q23o). The company presents induction courses for both management and workers. | 20.7% (101) | 13.3% (65) | 66.1% (323) | 3.41 | 22 |
| Q23e). The employees do influence the management decisions related to work. | 14.9% (73) | 29.2% (143) | 55.9% (274) | 3.51 | 23 |

The majority of survey respondents 72.2% (n=366) believe that there is an OC in the department to develop skills and abilities at the GDH. This is followed by over 50% of those who generally agreed on the following: that they have good relationship with their co-workers, that the promotions in the department are on the basis of qualification and experience, that they hold formal staff meetings at the department, that their bosses help in the flow of information, that management in the department encourages people to reflect on information and data and reframe these at the strategic level, that employees are encouraged to exchange information and knowledge for solving problems in the department and that they often consult colleagues from other business units when they are stuck and cannot do their job. Clearly this is the OC required and it serves as an enabler for KM.

However, there is a fairly large number of survey respondents 67.1% (n=326) who do not agree that there is a culture of a departmental KM within the GDH. An equally large number of survey respondents 60% (n=292) disagreed that they receive any in-service training on a continual basis. This issue is made even more complex by the moderately high number of survey respondents who did not express an opinion. The indications here are that there is some dissatisfaction with the amount of in-service training to improve knowledge and skills.

### 4.6.14. Organisational structure

The survey respondents were asked to indicate their levels of agreement with the existence of an OS for KM at the GDH. The information is shown in Table 33.

An OS is key to the fluidity of organisational activities and if properly implemented, ensures that everyone contributes to the success of the organisation (Vimba *et al.,* 2013). This is in line with the findings by (Claver-Cortés *et al.,* 2007) that the generation and transfer of knowledge depended on factors such as fewer hierarchical OSs.

All the responses were below 50% of both the survey respondents who agreed that there exist an OS at the GDH that enables and support KM and those who disagreed. There were also an even moderately high number of survey respondents who chose

to remain neutral. The implication is that the employees are not particularly certain if the OS is supportive of KM.

Table 33: Organisational Structure

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q24a). The department's structure or that of a related healthcare entity allow and support employees to accomplish their task. | 44.4% (219) | 31.8% (157) | 23.7% (117) | 2.82 | 1 |
| Q24f). There is a formal mentoring program in the organisation. | 23.8% (117) | 39.2% (193) | 37.0% (182) | 3.24 | 2 |
| Q24c). Sharing of information happens constantly with other business units in formal ways to enable me to do my job well. | 26.9% (133) | 31.6% (156) | 41.5% (205) | 3.25 | 3 |
| Q24b). The department provide a better environment for improving the work knowledge of the employees. | 19.5% (96) | 41.7% (205) | 38.8% (191) | 3.31 | 4 |
| Q24e). There are ample opportunities for me to interact with my peers in and outside the organisation. | 22.3% (110) | 29.4% (145) | 48.3% (238) | 3.46 | 5 |
| Q24d). Sharing of information happens constantly with other colleagues in the department in formal ways to enable me to do my job well. | 19.4% (96) | 28.7% (142) | 51.8% (256) | 3.53 | 6 |

### 4.6.15. Information technology

The survey respondents were asked to indicate their levels of agreement about the existence of IT infrastructure to support KM at the GDH. The information is shown in Table 34.

The responses from the survey respondents were spread equally amongst those who agreed, disagreed and those who remained ambivalent to the existence of ICT to support KM. On the one hand, there were 53.7% (n=264) survey respondents who agreed that there is technology to allow free and easy access to information. Whereas, on the other hand there is disagreement that the department uses modern technologies to enhance the environment for KM practice, 30.9% (n=152), that the

department makes periodic knowledge contributions to the shared repository 26% (n=130), that the central knowledge repository is formally recognised as a tool or technology for knowledge transfer 29% (n=145) and that the communities of practice (CoP) is formally recognised as a tool or technology for knowledge transfer 27.8% (n=137). There was also a fairly high number of survey respondents who did not express an opinion.

Table 34: Information Technology

| Statement | Level of agreement | | | Mean | Rank |
|---|---|---|---|---|---|
| | Agree | Neutral | Disagree | | |
| Q25i). There is technological infrastructure that allows free and easy access to knowledge. | 53.7% (264) | 21.5% (106) | 24.8% (122) | 2.7 | 1 |
| Q25e). The discussion forums are formally recognised as a tool or technology for knowledge transfer. | 45.9% (226) | 21.1% (104) | 32.9% (162) | 2.85 | 2 |
| Q25c). The employees are made aware of the files in the systems that are relevant to their work. | 43.7% (215) | 22.6% (111) | 33.7% (166) | 2.93 | 3 |
| Q25h). The job promotion is formally recognised as a tool or technology for knowledge transfer. | 35.2% (172) | 32.3% (158) | 32.5% (159) | 2.98 | 4 |
| Q25a). The department use modern technologies to enhance the environment for KM practice. | 31.9% (157) | 30.9% (152) | 37.2% (183) | 3.04 | 5 |
| Q25b). The department make periodic knowledge contributions to the shared repository. | 35.5% (173) | 26.6% (130) | 37.9% (185) | 3.06 | 6 |
| Q25f). The central knowledge repository is formally recognised as a tool or technology for knowledge transfer. | 30.5% (150) | 29.5% (145) | 40.0% (197) | 3.21 | 7 |
| Q25d). The community of practice (CoP) is formally recognised as a tool or technology for knowledge transfer. | 26.8% (132) | 27.8% (137) | 45.3% (223) | 3.22 | 8 |
| Q25g). The job rotation is formally recognised as a tool or technology for knowledge transfer. | 35.1% (172) | 23.7% (116) | 41.2% (202) | 3.22 | 9 |

## 4.7. Exploratory factor analysis of dimensions

The validity of the instrument was determined using exploratory factor analysis. The aim was to determine whether the items were measuring the construct in preparation of structural equation modelling.

The purpose of an exploratory factor analysis is to investigate the relationship between numerous variables by grouping the data into a smaller number of factors. According to Hair *et al.* (2014), the primary purpose is to define the underlying structure among the variables in the analysis. The assumption underlying exploratory factor analysis is that common factors exist in the data but that these factors may be indirectly measured by the observed variables. Consequently, the common factors are concealed although they impact on the observed variables.

Exploratory factor analysis (EFA) is thus intended to explore the data if the links observed and latent variables are unknown or uncertain (Marsh, Morin, Parker & Kaur, 2014; Schmitt, 2011). Its purpose was to assess the construct validity of the KM capability (knowledge infrastructure capability and knowledge process capability). Factor analysis was used to associate variables that were closely related into groups. The variables that were not correlated with the other items in the dimension were eliminated when structural equation modelling was being done. The 15 aspects/variables that have been previously discussed can be used to determine those decreasing in the same group, that is, those strongly correlated.

The extent of relationships among all measured variables to every factor is represented by factor loading. In line with the guidelines proposed by Hair *et al.* (2014), this was done using EFA by identifying the underlying latent variables (Section 4.7) present in the patterns of correlations between the observed measures and identifying the underlying factor structure. A principal component analysis (PCA) was conducted. PCA is an extraction method used for identifying linear combinations of items, accounting for the maximum variation possible. The PCA process was to derive a small number of components (information technology, OS, OC, KM-A, OP and HSD) that can account for the variability found in a relatively large number of measures (Schmitt, 2011).

The items were rotated using Varimax normalised rotation with the composite factors while accounting for the maximum variance in the original set of variables. The Varimax rotation is a process of rotating factors in an attempt to find a factor solution that is equal to that obtained in the initial extraction but which has the simplest interpretation. Using the guidelines proposed by Hair *et al.* (2014) the criteria for

judging minimal factor loadings has to be meaningful, the factor loading for a significant level was restricted to .5. Restricting factor loading had the added advantage of making the tables easier to read and, in this case, removed incidence of cross-loadings (Hair *et al.,* 2014).

Communalities in variables describe the amount of variance in each variable that may be explained by underlying common factors. When the communality value is high the observed variable is significantly influenced by at least one common factor Salkind (2012). The communality values were then checked to measure the variability of the variable. According to Pallant (2016), a low value for communality (e.g., less than .3) is undesirable, as it could indicate that the variable does accord well with the other variables in its component. According to Hair *et al.* (2014) the communalities should be above .5, or most of the variables should have communalities above .6. In this case, the two guidelines will be used. Both communalities of more than .3 will be retained, as well as, in addition most of the communalities that are above .6.

In determining the number of factors that can be used to best represent the interactions among the set of variables, this study employed the latent root criteria where the factors significant are those with greater eigenvalues. This method is embedded in the SPSS package (Pallant, 2016). Eigenvalue (or latent root) is defined as column sum of squared loadings of a factor and it represents the amount of variance accounted for by a factor. The latent root criteria analysis is the most widely used criteria for extraction or to determine the number of factors to be retained (Hair *et al.,* 2014). The terms ‘factor’ and ‘component’ are used interchangeably in this analysis.

Hair *et al.* (2014) describe three techniques for factor extraction: latent root criterion or eigenvalue; percentage of variance and scree test. Factors having eigenvalues greater than one are considered significant and all other factors with eigenvalues less than one are considered insignificant and are disregarded. The other two techniques, percentage of variance and scree test are considered too subjective (Hair *et al.,* 2014; Salkind (2012); Schmitt 2011) and it is not uncommon in social sciences to consider a solution that accounts for 60 percent of the total variance (and in some instances even less) as a satisfactory solution (Hair *et al.,* 2014). The results obtained from the first

trial of the factor analysis were satisfactory. Only variables that were reliable were used in the study.

Latent root criteria provide an explanation of the eigenvalues ranging from large to small, thus providing a clear indication of the point at which the eigenvalues start tapering off to the horizontal (Salkind, 2012). The Keiser-Guttmann criterion applies the principle of using the number of factors that are equal to the number of eigenvalues in a sample correlation matrix that are greater than 1. In this way, the researcher may use those factors whose variance is, as a minimum, bigger than the variance of every observed variable Salkind (2012).

### 4.7.1. Factor analysis of the level of understanding of KM

Salkind (2012) recognised that factors are classificatory and are used to define each category. Naming factors may require theoretical knowledge of because seemingly dissimilar attributes can correlate strongly for unknown reasons. The name should reflect what is, as well as, what is not involved in a factor (Osborne, 2015) and this based on the variables that charge them ("load on") and where the variable "load" is decided based on a "cut-off" - cut-offs usually range from .5 to .6. The name should encapsulate the substantive nature of the factor and enable others to grasp its meaning. Thus, the factor naming was applied to describe and simplify the complex interrelationships in the data and involved selecting a label that best reflects the substance of the highly-loaded variables and those at near zero on a factor (Osborne, 2015). The factors were thus named according to their characteristics: perceived usefulness, perceived ease of use and behavioural intention.

According to the results (Table 35), the value of the KMO was .745, which exceeds the recommended value of .50, indicating an excellent correlation among these variables. The Chi-square value of 1 107.559 which was significant in the Bartlett's Test of Sphericity (BTS) with degrees of freedom of 36 and p-value = .000, indicating that this study was suitable for factor analysis. This means that there were sufficient investigative or analytical relationships among the variables.

Table 35: KMO and Bartlett's: level of understanding of KM

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .745 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 1107.559 |
| | df | 36 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q11a). Knowledge includes everything I know. | 1.000 | .456 |
| Q11b). Knowledge includes experience. | 1.000 | .753 |
| Q11c). Values and intuition forms part of my knowledge. | 1.000 | .701 |
| Q11d). My knowledge is hidden in my brain (*R). | 1.000 | .427 |
| Q11e). My knowledge is documented and available to others. | 1.000 | .537 |
| Q11f). The organisation strongly believes in the learning by doing concept. | 1.000 | .673 |
| Q11g). My knowledge gives me a competitive advantage. | 1.000 | .613 |
| Q11h). KM is a new way to add value to information in the department. | 1.000 | .773 |
| Q11i). A major new strategic initiative is to remain competitive. | 1.000 | .770 |

The communalities indicate the degree to which each variable is participating or contributing to the component solution. In this case, the communalities ranged from .45 to .77; thus, the variables fitted well with each other in their respective factors. Most of the variables had communalities of more than .6.

The factor solution resulted in a three-factor solution as shown in Table 36. The factor solution was robust since the amount of variability accounted for was 63.38%. The remaining 36.32% were unexplained by the factor solution. In practice a robust solution should account for at least 50% of the variance or even less in practical research (Hair, *et al.,* 2014).

The three factors were named "Identification of current stock of organisational knowledge" with an eigenvalue of 2.851 contributing 31.681% of the total variance, "Realisation of the value of current stock of organisational knowledge" with an eigenvalue of 1.567 contributing 17.52% of the total variance and "Protecting of the current stock of organisational knowledge" with an eigenvalue of 1.286 contributing 14.29% of the total variance. The amount of variability is explained by the factor solution.

Table 36: Rotated factor solution level of understanding of KM

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1**: *Identification of current stock of organisational knowledge* | | 2.851 | 31.68% |
| Q11b | Knowledge includes experience. | .864 | | |
| Q11c | Values and intuition forms part of my knowledge. | .834 | | |
| Q11g | My knowledge gives me a competitive advantage. | .738 | | |
| Q11a | Knowledge includes everything I know. | .665 | | |
| Q11d | My knowledge is hidden in my brain (*R). | .616 | | |
| | **Factor 2:** *Realisation of the value of current stock of organisational knowledge* | | 1.567 | 17.42% |
| Q11h | KM is a new way to add value to information in the department. | .879 | | |
| Q11i | A major new strategic initiative is to remain competitive. | .876 | | |
| | **Factor 3:** *Protecting of the current stock of organisational knowledge* | | 1.286 | 14.29% |
| Q11f | The organisation strongly believes in the learning by doing concept. | .820 | | |
| Q11e | My knowledge is documented and available to others. | .703 | | |
| | **Total variance explained** | | | **63.38%** |

### 4.7.2. Factor analysis of KM strategies operational objectives

Table 37: KMO and Barlett's Test – KM strategies operational objectives

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .799 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 1368.485 |
| | df | 36 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q12a). The department has a written KM policy or strategy in place. | 1.000 | .452 |
| Q12c). KM is a formal function in the organisation. | 1.000 | .758 |
| Q12d). KM is all about intellectual capital, intellectual assets and a learning organisation. | 1.000 | .630 |
| Q12i). I need knowledge to carry out my work. | 1.000 | .732 |
| Q12m). The department has policies or programmes intended to improve worker retention. | 1.000 | .690 |
| Q12n). The department provides training related to KM practices. | 1.000 | .714 |
| Q12o). I have received informal training related to KM. | 1.000 | .659 |
| Q12r). The department regularly updates database/repository of good work practices, lessons learned or listings of experts. | 1.000 | .723 |
| Q12s). There is documentation such as lessons learned, training manuals, good work practices, articles for publication, etc. (organisation memory. | 1.000 | .649 |

According to the results (Table 37), the value of the KMO was .799, which exceeds the recommended value of .50 and the Bartlett's Test of Spherity value from the data set showed statistical significance (Chi-square = 1 368.485 with degrees of freedom of 36 and p-value = .000) indicating an excellent correlation among these variables. This means that this study was suitable for factor analysis and the rejection of the null hypothesis.

Table 38 shows that most of the communalities were above .6. The solution was a three-factor solution with the first factor accounting for 28.09%, the second factor for 22.81% and the third factor accounted for 15.85%. All in all, the factors accounted for 66.74% of total variance. Thus 33.26% are unaccounted for and the solution is robust since it accounts for at least 50%. The factor solution resulted in a three-factor solution as shown in Table 38.

Table 38: Rotated factor solution on KM strategies operational objectives

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *KM implementation strategies* | | 2.528 | 28.09% |
| Q12c | KM is a formal function in the organisation. | .854 | | |
| Q12n | The department provides training related to KM practices. | .798 | | |
| Q12m | The department has policies or programs intended to improve worker retention. | .763 | | |
| Q12a | The department has a written KM policy or strategy in place. | .557 | | |
| | **Factor 2**: *Source and development to support KM* | | 2.052 | 22.81% |
| Q12s | There is documentation such as lessons learnt, training manuals, good work practices, articles for publication, etc. (organisation memory). | .797 | | |
| Q12o | I have received informal training related to KM. | .754 | | |
| Q12r | The department regularly updates database/repository of good work practices, lessons learnt or listings of experts. | .734 | | |
| | **Factor 3**: *Improve use of current stock of organisational knowledge* | | 1.426 | 15.85% |
| Q12i | I need knowledge to carry out my work. | .851 | | |
| Q12d | KM is all about intellectual capital, intellectual assets and a learning organisation. | .735 | | |
| | **Total variance explained** | | | **63.38%** |

The name of the first factor was “KM implementation strategies.” It consists of KM training, policies, strategies and programs. The second factor was named “Source and development to support KM” because of the KM training required and lastly the third factor was named “Improve use of current stock of organisational knowledge” because of knowledge utilisation.

### 4.7.3. Factor analysis of KM use in the department

The KMO value was .892 with a significant BTS of Chi-square = 3 445.691 with degrees of freedom of 45 and p-value = .000 (Table 39). Thus, there was sufficient correlation between variables and the KMO measure of sampling indicated that the correlations were adequate for factor analysis.

Table 39: KMO and Bartlett’s Test – KM use in the department

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .892 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 3445.691 |
| | df | 45 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q13a). To improve the competitive advantage of the department. | 1.000 | .769 |
| Q13b). To help integrate knowledge within the department. | 1.000 | .869 |
| Q13c). To improve the capture and use of knowledge from sources outside the department. | 1.000 | .884 |
| Q13d). To improve sharing or transferring knowledge with other employees in the department. | 1.000 | .736 |
| Q13e). To increase efficiency by using knowledge to improve HSD processes. | 1.000 | .567 |
| Q13f). To protect the department from loss of knowledge due to employees' departure. | 1.000 | .738 |
| Q13g). To train employees to meet strategic objectives of the department. | 1.000 | .802 |
| Q13h). To increase employee acceptance of innovation. | 1.000 | .649 |
| Q13i). To improve employee retention. | 1.000 | .520 |
| Q13j). To identify and/or protect strategic knowledge present in the department. | 1.000 | .589 |

Most of the communalities were above .6. Thus, the solution is robust since it accounts for at least 50%. The factor solution resulted in a two-factor solution as shown in Table 40. The first factor accounted for 43.70% of the total variance with an eigenvalue of 4.37 and the second factor accounted for 27.53% with an eigenvalue of 2.752. The

amount of total variance justified by the solution was 71.23% and the solution was robust.

The first factor was named “Retention of current organisational intellectual property” since the issues were to protect the department from loss of knowledge and the second factor was named “Application of current stock of organisational knowledge” due to the capture and integration of knowledge in the department for competitive advantage.

This is evidence that knowledge is applied within the organisations. Uriarte (2008) agrees that, if knowledge is executed and applied in an appropriate manner, KM would create a more collective environment, eliminate and encourage knowledge-sharing.

Table 40: Rotated factor solution on KM use in the department

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Retention of current organisational intellectual property* | | 4.370 | 43.70% |
| Q13f | To protect the department from loss of knowledge due to employees' departure. | .846 | | |
| Q13g | To train employees to meet strategic objectives of the department. | .841 | | |
| Q13d | To improve sharing or transferring knowledge with other employees in the department. | .792 | | |
| Q13h | To increase employee acceptance of innovation. | .753 | | |
| Q13e | To increase efficiency by using knowledge to improve HSD processes. | .733 | | |
| Q13j | To identify and/or protect strategic knowledge present in the department. | .730 | | |
| Q13i | To improve employee retention. | .679 | | |
| | **Factor 2**: *Application of current stock of organisational knowledge* | | 2.753 | 27.53% |
| Q13b | To help integrate knowledge within the department. | .891 | | |
| Q13c | To improve the capture and use of knowledge from sources outside the department. | .886 | | |
| Q13a | To improve the competitive advantage of the department. | .849 | | |
| | **Total variance explained** | | | **71.23%** |

### 4.7.4. Factor analysis on effectiveness in KM practices

In terms of KM practices as shown in Table 41, the KMO value was .796, which exceeds the recommended value of .50 and the BTS value from the data gave a Chi-square = 1 802.371 with degrees of freedom of 55 and p-value = .000.

This means that there were sufficient investigative relationships among the variables. The KMO and BTS values suggest that the data set in this study was suitable for factor analysis.

Table 41: KMO and Bartlett's Test - Effectiveness KM practices

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .796 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 1802.371 |
| | df | 55 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q14a). Increase our knowledge-sharing horizontally (across departments, functions or business units). | 1.000 | .517 |
| Q14b). Increase our knowledge-sharing vertically (up the department hierarchy). | 1.000 | .557 |
| Q14c). Improve employee efficiency or productivity. | 1.000 | .499 |
| Q14d). Improve skills and knowledge of employees. | 1.000 | .498 |
| Q14e). Improve relationships with healthcare services recipients. | 1.000 | .588 |
| Q14f). Help us add new healthcare services. | 1.000 | .567 |
| Q14g). Increase our adaption of service to citizens' requirements and needs. | 1.000 | .690 |
| Q14h). Increase flexibility in HSD and innovation. | 1.000 | .761 |
| Q14i). Prevent duplicate research and development. | 1.000 | .689 |
| Q14j). Improve our corporate organisation memory. | 1.000 | .764 |
| Q14k). Increase our ability to capture knowledge from public research institutions including universities and government laboratories (establishments). | 1.000 | .686 |

In this case, the communalities ranged from .5 to .76 implying that the variables fitted well with each other in their respective factors. Most of the variables had

communalities of more than .6. The factor solution resulted in a three-factor solution as shown in Table 42.

The factor solution was robust since the amount of variability accounted for was 61.97%. Thus 38.03% were unexplained by the factor solution. The three factors were respectively named “Extent to which certain positive consequences are likely to happen if KM practices were implemented; positive employee performance”; and “Effective and efficient use of current organisational level”.

Table 42: Rotated factor solution on effectiveness in KM

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Extent to which certain positive consequences are likely to happen if happen if KM practices were implemented* | | 3.120 | 28.36% |
| Q14j | Improve our corporate organisation memory. | .861 | | |
| Q14h | Increase flexibility in HSD and innovation. | .855 | | |
| Q14k | Increase our ability to capture knowledge from public research institutions including universities and government laboratories (establishments). | .797 | | |
| Q14g | Increase our adaptation of service to citizens' requirements and needs. | .792 | | |
| | **Factor 2:** *Positive employee performance* | | 2.200 | 20.00% |
| Q14b | Increase our knowledge-sharing vertically (up the department hierarchy). | .732 | | |
| Q14c | Improve employee efficiency or productivity. | .689 | | |
| Q14d | Improve skills and knowledge of employees. | .641 | | |
| Q14e | Improve relationships with healthcare services recipients. | .611 | | |
| Q14a | Increase our knowledge-sharing horizontally (across departments, functions or business units). | .580 | | |
| | **Factor 3:** *Effective and efficient use of current organisational level* | | 1.497 | 13.61% |
| Q14i | Prevent duplicate research and development. | .824 | | |
| Q14f | Help us add new healthcare services. | .697 | | |
| | **Total variance explained** | | | **61.97%** |

It is clear that the survey respondents fully understand the importance of KM praxis Colomo-Palacios, Casado-Lumbreras, Soto-Acosta and Misra (2014) emphasise that KM empowers people to resolve problems efficiently, to make right decisions, to attend to queries made by clients and to create new products and services to satisfy customer needs. This indicates that the existing KM practices in the organisation are effective. Desimone, Hochberg, Porter, Polikoff, Schwartz & Johnson (2013) agree and add that the benefits of a successful KM system are: competitive advantage, quick turnaround times and ability to innovate and client co-operation.

Table 43: KMO and Bartlett's Test – Knowledge Creation

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .659 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 355.180 |
| | df | 45 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q15b). I regularly attend conferences/ workshops/seminars related to my field of expertise. | 1.000 | .653 |
| Q15c). I interact regularly with a wide network of contacts within my field. | 1.000 | .369 |
| Q15d). Mentoring of new team members is encouraged. | 1.000 | .628 |
| Q15e). I have access to both local and international standards and working procedures. | 1.000 | .314 |
| Q15f). The company offers a learning environment which facilitates innovation. | 1.000 | .655 |
| Q15i). The department is open to new ideas and insights to redesigning work processes and design. | 1.000 | .488 |
| Q15j). Employees have an opportunity to work on new projects and programmes, depending on their experience, qualifications and availability. | 1.000 | .499 |
| Q15k). Developing new knowledge and testing new ideas is assessed and rewarded in my department. | 1.000 | .626 |
| Q15n). Management information systems, Internet, Intranet, knowledge repository tools are used for knowledge creation. | 1.000 | .665 |
| Q15o). The department use mentoring, coaching, job rotation and community of practice for knowledge creation. | 1.000 | .671 |

The factor solution yielded four factors with a measure of sampling adequacy = .659 indicating that the correlations were adequate for factor analysis as shown in Table 43. The BTS value from the data set showed statistical significance (Chi-square = 355.

180 with degrees of freedom of 45 and p-value = .000) leading to the rejection of the null hypothesis by reason of lack of sufficient correlation between variables. This means that there were sufficient relationships among the variables to investigate.

### 4.7.5. Factor analysis of knowledge creation

Most of the communalities were above .6 as proposed by Hair *et al.* (2014). The factor solution is shown in Table 44.

Table 44: Rotated factor solution on knowledge creation

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Positive behaviour change* | | 1.748 | 17.48% |
| Q15k | Developing new knowledge and testing new ideas is assessed and rewarded in my department. | .786 | | |
| Q15j | Employees have an opportunity to work on new projects and programs, depending on their experience, qualifications and availability. | .675 | | |
| Q15i | The department is open to new ideas and insights to redesigning work processes and design. | .632 | | |
| | **Factor 2:** *Positive employees' development and performance improvement* | | 1.412 | 14.12% |
| Q15d | Mentoring of new team members is encouraged. | .786 | | |
| Q15c | I interact regularly with a wide network of contacts within my field. | .597 | | |
| Q15e | I have access to both local and international standards and working procedures. | .508 | | |
| | **Factor 3:** *Positive impact on HR practices and the usage of technology* | | 1.371 | 13.71% |
| Q15o | The department use mentoring, coaching, job rotation and CoP for knowledge creation. | .813 | | |
| Q15n | Management information systems, Internet, Intranet, knowledge repository tools are used for knowledge creation. | .810 | | |
| | **Factor 4:** *General positive employee's development* | | 1.038 | 10.38 |
| Q15f | The company offers a learning environment which facilitates innovation. | .696 | | |
| Q15b | I regularly attend conferences/ workshops/seminars related to my field of expertise. | -.681 | | |
| | **Total variance explained** | | | **55.69%** |

The factor solution was robust since the amount of variability accounted for was 55.69%%. Thus 44.31% were unexplained by the factor solution. The four factors were respectively named “Positive behaviour change”; “Positive employees’ development” and “Performance improvement”; “Positive impact on HR practices” and the usage of technology”; and “General positive employee’s development”.

It can be concluded that there are systems in the organisation to create knowledge. This is re-iterated by the global KM framework (Pawlowski & Bick, 2012) who postulated that not only should knowledge be identified but that there should be systems to complete the disparity in instances where knowledge is not available.

### 4.7.6. Factor analysis of knowledge acquisition

Table 45: KMO and Bartlett's Test - Knowledge Acquisition

KMO and Bartlett's Test

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .869 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 3744.894 |
| | df | 78 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q16a). I am adequately trained to carry out my daily duties. | 1.000 | .558 |
| Q16b). The culture of learning from each other exists in the department. | 1.000 | .657 |
| Q16c). Long serving/experienced employees are used to enhance the knowledge base of the team. | 1.000 | .493 |
| Q16d). I have an opportunity to do other related jobs in the department to enhance my knowledge (job rotation). | 1.000 | .685 |
| Q16e). Documents providing information regarding new knowledge created are periodically circulated in the team. | 1.000 | .559 |
| Q16f). The data and information are disseminated on a regular basis through both electronic and traditional information channels. | 1.000 | .759 |
| Q16h). Employees are encouraged to be part of external professional networks and associations. | 1.000 | .731 |
| Q16i). In this organisation, we collect information about the needs and wishes of our customers. | 1.000 | .747 |
| Q16j). If important knowledge is not available, my institution buys it, e.g. standards, journals, research reports. | 1.000 | .783 |
| Q16k). Our organisation/institution employs new staff members who possess the missing knowledge when required. | 1.000 | .724 |
| Q16l). Our organisation does research to explore future possibilities and new knowledge. | 1.000 | .690 |
| Q16m). Employees attend courses, training programmes and seminars to remain up to date. | 1.000 | .719 |
| Q16n). Our competitors inspire us to develop new methods and approaches to delivering training. | 1.000 | .765 |

According to data in Table 45, BTS had a Chi-square value = 3 744.894 with a p-value =.000 leading to the rejection of the null hypothesis of lack of sufficient correlation between variables. The KMO measure of sampling adequacy was .869 indicating that the correlations are adequate for factor analysis. Most of the communalities were above .6 as proposed by Hair *et al.* (2014).

The first factor was named “Positive impact to knowledge creation” due to the impact training and development, competitor information, seminars and workshops have on the acquisition of new knowledge and it had an eigenvalue of 4.357 contributing 33.52% of the total variance. The second factor was named “Additions to knowledge creation/acquisition process” since it covered issues on new employees coming with new knowledge; the department purchasing standards, journals, research reports; and the department collecting information about the needs and wishes of our customers. It had an eigenvalue of 3.184 contributing 24.49% of the total variance.

The third factor was named “New knowledge”. The third factor had an eigenvalue of 1.330 contributing 10.23% of the total variance. The factor solution was robust since the amount of variability accounted for was 68.24%. The factor solution is shown in Table 46.

This indicates that there are systems in the organisation to acquire additional knowledge. This is supported by (White & Cicmil, 2016) that organisations should buy extra knowledge to supplement the current base. Thus 31.76% were unexplained by the factor solution.

Table 46: Rotated factor solution on knowledge acquisition

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Positive impact to knowledge creation* | | 4.357 | 33.52% |
| Q16n | Our competitors inspire us to develop new methods and approaches to delivering training. | .826 | | |
| Q16m | Employees attend courses, training programs and seminars to remain up to date. | .797 | | |
| Q16h | Employees are encouraged to be part of external professional networks and associations. | .771 | | |
| Q16b | The culture of learning from each other exists in the department. | .766 | | |
| Q16l | Our organisation does research to explore future possibilities and new knowledge. | .763 | | |
| Q16d | I have an opportunity to do other related jobs in the department to enhance my knowledge (job rotation). | .745 | | |
| Q16c | Long serving/experienced employees are used to enhance the knowledge base of the team. | .552 | | |
| | **Factor 2:** *Additions to knowledge creation/acquisition process.* | | 3.184 | 24.49% |
| Q16j | Q16j). If important knowledge is not available, my institution buys it, e.g. standards, journals, research reports. | .837 | | |
| Q16k | Q16k). Our organisation/institution employs new staff members who possess the missing knowledge when required. | .824 | | |
| Q16f | Q16f). The data and information are disseminated on a regular basis through both electronic and traditional information channels. | .813 | | |
| Q16i | Q16i). In this organisation we collect information about the needs and wishes of our customers. | .811 | | |
| | **Factor 3:** *New knowledge* | | 1.330 | 10.23 |

### 4.7.7. Factor analysis of knowledge share/transfer

According to the results in Table 47, the KMO value was .833, which exceeds the recommended value of .60 and the BTS value from the data set showed statistical significance Chi-square X2 = 3 242.486 with degrees of freedom of 66 and p-value = .000 (<.05). This means that there were sufficient relationships among the variables to investigate. The KMO and BTS values suggest that the data set in this study was suitable for factor analysis. All communalities were above .5 and a three-factor solution was obtained as shown in Table 48.

Table 47: KMO and Bartlett's Test – Knowledge Transfer

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .833 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 3242.486 |
| | df | 66 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q17a). Databases/centralised knowledge repository of good work practices, lessons learned are available and updated in the department. | 1.000 | .836 |
| Q17b). Project learning (success or failures). Reports are accessible and available to other team members. | 1.000 | .764 |
| Q17c). We have ICT infrastructure to access and store lessons learned and information in general. | 1.000 | .835 |
| Q17d). Departmental operational policies/procedures/work manuals are located in a central place accessible to all members of staff. | 1.000 | .516 |
| Q17e). Knowledge assets (e.g. customer details) are stored and preserved. | 1.000 | .529 |
| Q17g). In our organisation, we review failures and successes and lessons learnt are set down. | 1.000 | .609 |
| Q17h). We use handbooks and work guidelines, which are up to date. | 1.000 | .762 |
| Q17i). Changes in procedures, handbooks, etc. are communicated throughout the organisation to the correct team members. | 1.000 | .690 |
| Q17j). Our organisation has documented specific knowledge and skills of individuals. | 1.000 | .818 |
| Q17k). Experts in our organisation are encouraged to make explicit the methods they use in a step-by-step description. | 1.000 | .630 |
| Q17l). Retirements negatively affect KM in the organisation. | 1.000 | .618 |
| Q17m). The department use job rotation, mentorship, coaching, community of practice, discussion forums, job rotation, job promotion and knowledge repository for knowledge retention. | 1.000 | .583 |

Table 48: Rotated factor solution on knowledge share/transfer

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Positive impact on the retention of knowledge in the department* | | 4.063 | 33.86% |
| Q17a | Databases/centralised knowledge repository of good work practices, lessons learnt are available and updated in the department. | .905 | | |
| Q17c | We have ICT infrastructure to access and store lessons learnt and information in general. | .903 | | |
| Q17b | Project learning (success or failures). Reports are accessible and available to other team members. | .857 | | |
| Q17g | In our organisation, we review failures and successes and lessons learnt are set down. | .757 | | |
| Q17e | Knowledge assets (e.g. customer details) are stored and preserved. | .714 | | |
| Q17d | Departmental operational policies/procedures/work manuals are | .705 | | |

| | | | | |
|---|---|---|---|---|
| | located in a central place accessible to all members of staff. | | | |
| | **Factor 2:** *Knowledge availability and accessibility* | | 2.886 | 24.05% |
| Q17j | Our organisation has documented specific knowledge and skills of individuals. | .904 | | |
| Q17h | We use handbooks and work guidelines, which are up to date. | .868 | | |
| Q17i | Changes in procedures, handbooks, etc. are communicated throughout the organisation to the correct team members. | .790 | | |
| Q17k | Experts in our organisation are encouraged to make explicit the methods they use in a step-by-step description. | .766 | | |
| | **Factor 3**: *Significances for the retention process* | | 1.240 | 10.33% |
| Q17l | Retirements negatively affect knowledge management in the organisation. | .781 | | |
| Q17m | The department use job rotation, mentorship, coaching, CoP, discussion forums, job rotation, job promotion, and knowledge repository for knowledge retention. | .760 | | |
| | **Total variance explained** | | | **68.24%** |

The factor solution was robust since the amount of variability accounted for was 68.24%. The amount of unexplained variation was 32.76%. The three factors were respectively named “Positive impact on the retention of knowledge in the department” with an eigenvalue of 4.063 contributing 33.86% of the total variance, “Knowledge availability and accessibility” with an eigenvalue of 2.886 contributing 24.05% of the total variance and “Significances for the retention process” an eigenvalue of 1.240 contributing 10.33% of the total variance,

This shows that knowledge transfer within the organisation is working at the desired level. Yang (2007) confirmed that knowledge-sharing is a good basis for an organisation to achieve their business goals. The amount of variability is explained by the factor solution.

### 4.7.8. Factor analysis of knowledge retention/storage

According to the results in Table 49, the KMO value was .731, which exceeds the recommended value of .60 and the BTS value from the data set showed statistical significance Chi-square X2 = 2 603.042 with degrees of freedom of 120 and p-value

= .000 (<.05). This means that there were sufficient relationships among the variables to investigate.

Table 49: KMO and Bartlett's Test – Knowledge Retention

KMO and Bartlett's Test

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .731 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 2603.042 |
| | df | 120 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q18a). Work related knowledge is my personal competitive advantage. | 1.000 | .499 |
| Q18b). I often share my work-related knowledge with other team members. | 1.000 | .696 |
| Q18c). We have a budget for professional development and training in our department. | 1.000 | .585 |
| Q18d). We have a technological infrastructure to promote a knowledge-sharing environment within our department. | 1.000 | .657 |
| Q18e). I am willing to share my knowledge and experience with others. | 1.000 | .827 |
| Q18f). I am rewarded for sharing my knowledge with others. | 1.000 | .864 |
| Q18h). New members of staff are assigned to mentors who help them to find their way in the department. | 1.000 | .690 |
| Q18i). A lot of knowledge is distributed in informal ways outside the office settings, e.g. in the corridors, tea-rooms, etc. | 1.000 | .754 |
| Q18j). We have meetings at which professional matters are discussed regularly. | 1.000 | .828 |
| Q18k). Colleagues regularly share positive experiences and successful projects undertaken. | 1.000 | .845 |
| Q18l). We have a peer review system which allows opportunities for discussing work methodologies. | 1.000 | .812 |
| Q18m). There are opportunities for job rotation based on one's know-how, thereby ensuring knowledge distribution. | 1.000 | .669 |
| Q18n). Senior managers in the department often share operational knowledge with employees to help them carry out their work. | 1.000 | .731 |
| Q18o). There is generally a free flow of information in the department. | 1.000 | .703 |
| Q18p). The perception of sharing knowledge in the department is that it facilitates the completion of tasks, accomplish tasks quickly, improves job performance and speeds up decision making. | 1.000 | .724 |
| Q18q). The specific knowledge that need is found only among experts in the department rather than in the central location. | 1.000 | .605 |

The KMO and BTS values suggest that the data set in this study was suitable for factor analysis.

Most of the communalities were above .6 as proposed by Hair *et al.* (2014) and a five-factor solution was obtained as indicated in Table 50.

Table 50: Rotated factor solution on knowledge retention /storage

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Anticipate positive impact on the flow of knowledge* | | 2.485 | 16.57% |
| Q18k | Colleagues regularly share positive experiences and successful projects undertaken. | .883 | | |
| Q18j | We have meetings at which professional matters are discussed regularly. | .865 | | |
| Q18i | A lot of knowledge is distributed in informal ways outside the office settings, e.g. in the corridors, tea-rooms, etc. | .856 | | |
| | **Factor 2:** *Anticipate positive behaviour of knowledge-sharing/transfer* | | 2.248 | 14.97% |
| Q18n | Senior managers in the department often share operational knowledge with employees to help them carry out their work. | .848 | | |
| Q18p | The perception of sharing knowledge in the department is that it facilitates the completion of tasks, accomplishes tasks quickly, improves job performance and speeds up decision-making. | .845 | | |
| Q18o | There is generally a free flow of information in the department. | .763 | | |
| | **Factor 3:** *Anticipate positive employee interaction for sharing/transfer of knowledge* | | 2.214 | 14.76% |
| Q18l | We have a peer review system which allows opportunities for discussing work methodologies. | .895 | | |
| Q18h | New members of staff are assigned to mentors who help them to find their way in the department. | .820 | | |
| Q18m | There are opportunities for job rotation based on one's know-how, thereby ensuring knowledge distribution. | .792 | | |
| | **Factor 4:** *Knowledge-sharing/transfer support structures* | | 2.007 | 13.38% |
| Q18c | We have a budget for professional development and training in our department. | .763 | | |
| Q18d | We have a technological infrastructure to promote a knowledge-sharing environment within our department. | .760 | | |
| Q18b | I often share my work-related knowledge with other team members. | .642 | | |
| Q18a | Work related knowledge is my personal competitive advantage. | .573 | | |
| | **Factor 5:** *Will result in applicable reaction* | | 1.668 | 11.12% |
| Q18e | I am willing to share my knowledge and experience with others. | .883 | | |
| Q18g | Resignations are the main inhibitors to knowledge transfer in the department. | .875 | | |
| | **Total variance explained** | | | **70.81%** |

The five factors were respectively named “Anticipate positive impact on the flow of knowledge” with an eigenvalue of 2.485 contributing 16.57% of the total variance; “Anticipate positive behaviour of knowledge-sharing/transfer” with an eigenvalue of 2.248 contributing 14.97% of the total variance; “Anticipate positive employee interaction for sharing/transfer of knowledge” with an eigenvalue of 2.214 contributing 14.76% of the total variance; “Knowledge-sharing/transfer support structures” with an eigenvalue of 2.007 contributing 13.38% of the total variance; “Will result in applicable reaction” with an eigenvalue of 1.668 contributing 11.12% of the total variance.

The main reasons were that this encourages employees to share knowledge experiences and successful projects, meeting with professionals to discuss issues, sharing of operational knowledge, availability of IT to facilitate information flow. The solution was robust as it accounted for 70.81% of the total variance. Only approximately 20% was unexplained.

### 4.7.9. Factor analysis of knowledge transfer activities

The data in Table 51 shows that the KMO measure of sampling adequacy was .830 and the BTS had a Chi-square value of X2 =3 691.167 with a p-value of .000 (<.05) thereby supporting the factorability of the correlation matrix. This means that there were sufficient relationships among the variables to investigate. The KMO and BTS values suggest that the data set in this study was suitable for factor analysis.

There were five factors with eigenvalues exceeding one. Thus, it was a five-factor solution as shown in Table 52. The majority of the communalities were above .6.

The factors were respectively named “Knowledge transfer mechanisms and tools” with an eigenvalue of 4.357 contributing 23.88% of the total variance; “Additional knowledge-sharing/transfer processes” with an eigenvalue of 2.942 contributing 15.48% of the total variance; “Advantages due to the knowledge-sharing/transfer environment” with an eigenvalue of 2.260 contributing 11.89% of the total variance; “Barriers due to lack of right culture” with an eigenvalue of 1.721 contributing 9.06% of the total variance and “Investment in Technology to promote knowledge-sharing”

with an eigenvalue of 1.103 contributing 5.80% of the total variance. The solution was robust since it accounted for 66.12% of the total variation.

The naming of the factors was due to management support and the available HR processes, opportunities and programs available in the department encouraging employees to transfer and share knowledge. The knowledge-sharing and transfer was also facilitated by the use of technology (Casimir, 2012; Paulin & Suneson, 2012)

Table 51: KMO and Bartlett's Test – Knowledge Transfer activities

| KMO and Bartlett's Test | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .830 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 3691.167 |
| | df | 171 |
| | Sig. | .000 |

| Communalities | | |
|---|---|---|
| | **Initial** | **Extraction** |
| Q19a). Succession planning. | 1.000 | .583 |
| Q19b). Communities of practice. | 1.000 | .674 |
| Q19c). Coaching. | 1.000 | .670 |
| Q19d). Knowledge repositories. | 1.000 | .626 |
| Q19e). Storytelling. | 1.000 | .681 |
| Q19f). Orientation, general and job specific. | 1.000 | .719 |
| Q19g). Mentorship, formal and informal. | 1.000 | .607 |
| Q19h). Discussion forums are organised in the department/organisation on time basis in order to encourage people' knowledge transfer. | 1.000 | .665 |
| Q19i). Knowledge-sharing is practised and emphasised in our company. | 1.000 | .667 |
| Q19j). I am willing to share my knowledge and new ideas with other co-workers. | 1.000 | .483 |
| Q19k). My manager encourages the sharing of knowledge among team members. | 1.000 | .686 |
| Q19l). My organisation provides the opportunity for employees to share their knowledge. | 1.000 | .515 |
| Q19m). My manager help me to find solutions to difficult problems. | 1.000 | .768 |
| Q19n). The rewards I receive are proportionate to my contribution. | 1.000 | .675 |
| Q19o). I feel appreciated when I have invested my time and energy in the sharing of knowledge. | 1.000 | .592 |
| Q19p). I feel loss of power and security about my job when I share my knowledge (*R). | 1.000 | .786 |
| Q19q). I need to have to trust my co-workers first before I share my knowledge (*R). | 1.000 | .759 |
| Q19s). My interaction with co-workers affect the sharing of your knowledge with them in a positive manner. | 1.000 | .525 |
| Q19t). My company invest in technology to promote the sharing of knowledge. | 1.000 | .883 |

Table 52: Rotated factor solution on knowledge transfer activities

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Knowledge transfer mechanisms and tools* | | 4.357 | 23.88% |
| Q19f | Orientation, general and job specific. | .846 | | |
| Q19e | Storytelling. | .825 | | |
| Q19c | Coaching. | .818 | | |
| Q19b | Communities of practice. | .816 | | |
| Q19d | Knowledge repositories. | .781 | | |
| Q19g | Mentorship, formal and informal. | .776 | | |
| | **Factor 2:** *Additional knowledge-sharing/transfer processes.* | | 2.942 | 15.48% |
| Q19i | Knowledge-sharing is practiced and emphasised in our company. | .808 | | |
| Q19h | Discussion forums are organised in the department/organisation on time basis in order to encourage people' knowledge transfer. | .777 | | |
| Q19o | I feel appreciated when I have invested my time and energy in the sharing of knowledge. | .738 | | |
| Q19n | The rewards I receive are proportionate to my contribution. | .644 | | |
| Q19l | My organisation provides the opportunity for employees to share their knowledge. | .644 | | |
| | **Factor 3:** *Advantages due to the knowledge-sharing/transfer environment* | | 2.260 | 11.89% |
| Q19k | My manager encourages the sharing of knowledge among team members. | .813 | | |
| Q19m | My manager helps me to find solutions to difficult problems. | .769 | | |
| Q19s | My interaction with co-workers affects the sharing of your knowledge with them in a positive manner. | .634 | | |
| Q19j | I am willing to share my knowledge and new ideas with other co-workers. | .538 | | |
| | **Factor 4:** *Barriers due to lack of right culture* | | 1.721 | 9.06% |
| Q19p | I feel loss of power and security about my job when I share my knowledge (*R). | .879 | | |
| Q19q | I need to have to trust my co-workers first before I share my knowledge (*R). | .862 | | |
| | **Factor 5:** *Investment in Technology to promote knowledge-sharing* | | 1.103 | 5.80% |
| Q19t | My company invest in technology to promote the sharing of knowledge | .939 | | |
| | **Total variance explained** | | | **66.12%** |

### 4.7.10. Factor analysis of knowledge application/use

The data in Table 53 shows that the KMO value was .906 with the BTS having Chi-square value of X2 = 2 290.897 with degrees of freedom of 45 and a p-value of .000 (<.05). This means that there were sufficient relationships among the variables to

investigate. The KMO and BTS values suggest that the data set in this study was suitable for factor analysis.

Only one component was extracted and named “Knowledge application/use activity” and has an eigenvalue of 5.201 contributing 52.01% of the total variance.

The solution could therefore not be rotated. However, the factor solution was robust since the amount of variability accounted for was 52.01%. Thus 47.99% were unexplained by the factor solution. This is evidence that knowledge is applied within the organisation.

Liu & Deng 2(015) emphasise that knowledge application empowers people to resolve problems efficiently, to make right decisions, to attend to queries made by customers and to create new services to satisfy customer needs. Therefore, these benefits are fully understood and are being realised by the survey respondents.

Table 53: KMO and Bartlett's Test - Knowledge Application/use

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .906 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 2290.897 |
| | df | 45 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q20a). I am able to use and apply the knowledge I have acquired from training sessions etc. | 1.000 | .265 |
| Q20b). Remote teams are supported adequately in terms of access to knowledge and networks. | 1.000 | .445 |
| Q20c). Knowledge is applied and shared successfully across all departments. | 1.000 | .564 |
| Q20d). Selling knowledge, such as through consultancies, attracts explicit attention from our institution. | 1.000 | .562 |
| Q20e). New knowledge is being promoted externally in the market through the dissemination of research findings. | 1.000 | .616 |
| Q20f). Experiences and feedback of customers is used to improve our service delivery. | 1.000 | .574 |
| Q20g). The existing know-how currently in the organisation is used in a creative manner in new applications. | 1.000 | .580 |
| Q20h). Employees promote new knowledge internally within the organisation. | 1.000 | .653 |
| Q20i). One of our strong qualities is combining our specialisations in multi-disciplinary teams or community of practice. | 1.000 | .554 |
| Q20j). We have a system to eliminate dysfunctional beliefs and attitudes at our organisation. | 1.000 | .389 |

In this case, most of the communalities were above .6 and factor solution resulted in a one factor solution as shown in Table 54.

Table 54: Factor solution on knowledge application/use

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Knowledge application/use* | | 5.201 | 52.01% |
| Q20h | Q20h). Employees promote new knowledge internally within the organisation. | .808 | | |
| Q20e | Q20e). New knowledge is being promoted externally in the market through the dissemination of research findings. | .785 | | |
| Q20g | Q20g). The existing know-how currently in the organisation is used in a creative manner in new applications. | .762 | | |
| Q20f | Q20f). Experiences and feedback of customers is used to improve our service delivery. | .757 | | |
| Q20c | Q20c). Knowledge is applied and shared successfully across all departments. | .751 | | |
| Q20d | Selling knowledge, such as through consultancies, attracts explicit attention from our institution. | .750 | | |
| Q20i | One of our strong qualities is combining our specialisations in multi-disciplinary teams or CoP. | .744 | | |
| Q20b | Remote teams are supported adequately in terms of access to knowledge and networks. | .667 | | |
| Q20j | We have a system to eliminate dysfunctional beliefs and attitudes at our organisation. | .624 | | |
| Q20a | I am able to use and apply the knowledge I have acquired from training sessions etc. | .515 | | |
| Q20d | Q20d). Selling knowledge, such as through consultancies, attracts explicit attention from our institution. | .750 | | |
| | **Total variance explained** | | | **52.01%** |

### 4.7.11. Factor analysis of organisation performance

The data from Table 55 shows that the KMO value was .868, which exceeded the recommended value of .5 and the BTS value from the data set showed statistical significance of a Chi-square X2 = 5 075.896 with degree of freedom of a p-value .000 (<.05). This means that there were sufficient relationships among the variables to investigate. The KMO and BTS values suggest that the data set in this study was suitable for factor analysis.

In this case, the communalities ranged from .40 to .76, thus the variables fitted well with each other in their factor. Most of the variables had communalities of more than

.6. The factor solution resulted in a three-factor solution as shown in Table 56 The factor solution was robust since the amount of variability accounted for was 66.78% resulting in 33.22% but were unexplained by the factor solution.

The three factors were respectively named “Positive OP” with an eigenvalue of 3.213 contributing 22.95% of the total variance; “Positive performance attitude” with an eigenvalue of 3.211 contributing 22.94% of the total variance and “Employee performance management” with an eigenvalue of 2.925 contributing 20.89% of the total variance.

Table 55: KMO and Bartlett's Test - Organisation Performance

| **KMO and Bartlett's Test** | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .868 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 5075.896 |
| | df | 120 |
| | Sig. | .000 |

| **Communalities** | | |
|---|---|---|
| | **Initial** | **Extraction** |
| Q21b). The department's employees participate in setting the strategic goals of the department. | 1.000 | .436 |
| Q21c). The department's vision and mission are aligned with employees’ performance measurements. | 1.000 | .581 |
| Q21d). The employees understand the broad objectives of the department's healthcare strategy. | 1.000 | .741 |
| Q21e). The employees are aware of the key success factors of the department and healthcare strategy. | 1.000 | .679 |
| Q21f). Training programs are provided to employees. | 1.000 | .591 |
| Q21g). Performance of this organisation has been excellent in meeting its goals. | 1.000 | .646 |
| Q21h). Employees are always motivated with good team spirit. | 1.000 | .607 |
| Q21k). The department's procedures were followed easily to achieve goals. | 1.000 | .608 |
| Q21l). The department meets citizens’ healthcare needs. | 1.000 | .419 |
| Q21m). As an employee at the department, I am happy with the key performance objectives that are set. | 1.000 | .749 |
| Q21n). The line manager at the department continuously monitors the performance of the employees against set targets. | 1.000 | .720 |
| Q21o). The department offers effective developmental programmes for poor performers to enhance their performance at work. | 1.000 | .719 |
| Q21p). At the department, every employee’s performance is evaluated regularly. | 1.000 | .650 |
| Q21q). At the department, employees are evaluated fairly without any bias. | 1.000 | .695 |
| Q21r). As an employee at the department, I am happy with my evaluation performance rating. | 1.000 | .785 |
| Q21s). The department offers rewards to employees who meet their set goals to motivate them. | 1.000 | .756 |

The main reasons were that the employees were aware of the key success factors of the department and the department's healthcare strategy. Not only are they involved in setting the strategic goals of the department but they understand the department's goals and objectives and they are happy with the manner in which their performance is evaluated.

Table 56: Rotated factor solution on organisation performance

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Positive organisational performance* | | 3.213 | 22.95% |
| Q21r | As an employee at the department, I am happy with my evaluation performance rating. | .853 | | |
| Q21s | The department offers rewards to employees who meet their set goals to motivate them. | .834 | | |
| Q21p | At the department, every employee's performance is evaluated regularly. | .719 | | |
| Q21a | Strategic goals of the department are explained to employees. | .590 | | |
| Q21b | The department's employees participate in setting the strategic goals of the department. | .543 | | |
| | **Factor 2:** *Positive performance attitude* | | 3.211 | 22.94% |
| Q21e | The employees are aware of the key success factors of the department and healthcare strategy. | .777 | | |
| Q21f | Training programs are provided to employees. | .746 | | |
| Q21d | The employees understand the broad objectives of the department's healthcare strategy. | .722 | | |
| Q21g | Performance of this organisation has been excellent in meeting its goals. | .696 | | |
| Q21h | Employees are always motivated with good team spirit. | .640 | | |
| | **Factor 3**: *Employee performance management* | | 2.925 | 20.89% |
| Q21o | The department offers effective developmental programs for poor performers to enhance their performance at work. | .868 | | |
| Q21m | As an employee at the department, I am happy with the key performance objectives that are set. | .770 | | |
| Q21n | The line manager at the department continuously monitors the performance of the employees against set targets. | .765 | | |
| Q21c | The department's vision and mission are aligned with employees' performance measurements. | .555 | | |
| | **Total variance explained** | | | **66.78%** |

### 4.7.12. Factor analysis of healthcare service delivery

Table 57: KMO and Bartlett's Test - HSD

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .738 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 442.596 |
| | df | 6 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q22a). The department had a good service delivery rating before the major public-sector reform initiatives in 1994. | 1.000 | .587 |
| Q22b). The department had good productivity levels ratings before the 1994 major public-sector reform initiatives. | 1.000 | .501 |
| Q22c). The department achieves daily healthcare service targets. | 1.000 | .606 |
| Q22d). We carry out market research among public healthcare users before we introduce new healthcare services to the market. | 1.000 | .593 |

In terms of the dimension healthcare delivery, the factor analysis data in Table 57 gave a KMO of .738 and the BTS value from the data set showed statistical significance of a Chi-square X2 = 442.596 with degree of freedom of 6 and p-value .000 (<.05).

Thus, the KMO was above .5 and the BTS was significant. One can conclude that the data was appropriate for a factor analysis to be performed. All communalities were above .5 and factor solution resulted in a one factor solution as shown in Table 58.

Table 58: Rotated factor analysis on healthcare delivery

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Healthcare delivery* | | 2.287 | 57.18% |
| Q22c | The department achieves daily healthcare service targets. | .779 | | |
| Q22d | We carry out market research among public healthcare users before we introduce new healthcare services to the market. | .770 | | |
| Q22a | The department had a good service delivery rating before the major public-sector reform initiatives in 1994. | .766 | | |
| Q22b | The department had good productivity levels ratings before the 1994 major public-sector reform initiatives. | .708 | | |
| | **Total variance explained** | | | **57.18%** |

The factor solution was robust since the amount of variability accounted for was 57.18%. Thus 41.82% were unexplained by the factor solution. Since the factor was only one it was named “Healthcare delivery” with an eigenvalue of 2.287 contributing 57.18% of the total variance.

The HSD was seen by the employees as being achieved by the department. This was achieved through the increasing focus on the development of long-term service delivery plans (Schaay *et al.,* 2011). Thus, the continued search for new knowledge and the constant creation of new sources of competitive advantage provided the organisation with the ability to respond to changes in the market.

### 4.7.13. Factor analysis of organisational culture

Table 59: KMO and Bartlett's Test – OC

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .808 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 4680.389 |
| | df | 120 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q23a). The relationship I have with my boss help in the flow of information. | 1.000 | .720 |
| Q23c). Management in the department encourage people to reflect on information and data and reframe these at the strategic level. | 1.000 | .822 |
| Q23d). Employees are encouraged to exchange information and knowledge for solving problems in the department. | 1.000 | .828 |
| Q23e). The employees do influence the management decisions related to work. | 1.000 | .624 |
| Q23f). To do my work when I am stuck - I often consult my business unit manager. | 1.000 | .816 |
| Q23g). To do my work when I am stuck - I often make use of the documented procedures within the department. | 1.000 | .769 |
| Q23h). To do my work when I am stuck - I often consult other business units within the department. | 1.000 | .775 |
| Q23i). To do my work when I am stuck - I often consult colleagues from other business units. | 1.000 | .774 |
| Q23j). The employees hold formal staff meetings at the department. | 1.000 | .629 |
| Q23m). I receive formal evaluation of my work. | 1.000 | .676 |
| Q23n). I receive in service training on a continual basis. | 1.000 | .645 |
| Q23p). Promotions is on the basis of qualification and experience. | 1.000 | .821 |
| Q23q). I have a good relationship with my co-workers. | 1.000 | .693 |
| Q23u). My work environment is satisfactory. | 1.000 | .768 |
| Q23v). The department's culture is conducive to spending time with colleagues and meeting people. | 1.000 | .773 |
| Q23w). There is a platform and culture that enables me to freely share information with others in the organisation. | 1.000 | .537 |

According to the results in

Table 59, the dimension organisation culture had a KMO measure of .808 while the BTS value from the data set showed statistical significance of a Chi-square X2 = 4 4680.389 with degree of freedom of 120 and p-value .000 (<.05). Thus, there was

sufficient correlation between variables and the KMO measure of sampling indicated that the correlations are adequate for factor analysis.

Table 60: Rotated factor analysis solution on OC

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *Improvements in performance due to right OC* | | 4.104 | 25.65% |
| Q23f | To do my work when I am stuck - I often consult my business unit manager. | .887 | | |
| Q23h | To do my work when I am stuck - I often consult other business units within the department. | .872 | | |
| Q23i | To do my work when I am stuck - I often consult colleagues from other business units. | .867 | | |
| Q23g | To do my work when I am stuck - I often make use of the documented procedures within the department. | .858 | | |
| Q23j | The employees hold formal staff meetings at the department. | .749 | | |
| | **Factor 2**: *KM enablers due to employee recognition* | | 2.869 | 17.93% |
| Q23p | Promotions are on the basis of qualification and experience. | .841 | | |
| Q23q | I have a good relationship with my co-workers. | .805 | | |
| Q23u | My work environment is satisfactory. | .717 | | |
| Q23v | The department's culture is conducive to spending time with colleagues and meeting people. | .696 | | |
| Q23w | There is a platform and culture that enables me to freely share information with others in the organisation. | .565 | | |
| | **Factor 3**: *KM enablers due to development and training* | | 2.501 | 15.63% |
| Q23m | I receive formal evaluation of my work. | .811 | | |
| Q23n | I receive in service training on continual bases. | .785 | | |
| Q23e | The employees do influence the management decisions related to work. | .753 | | |
| | **Factor 4:** *General positive KM culture enablers.* | | 2.197 | 13.73% |
| Q23c | Management in the department encourages people to reflect on information and data and reframe these at the strategic level. | .865 | | |
| Q23d | Employees are encouraged to exchange information and knowledge for solving problems in the department. | .850 | | |
| Q23a | The relationship I have with my boss help in the flow of information. | .819 | | |
| | **Total variance explained** | | | **72.94%** |

In this case, all the communalities ranged from .537 to .828. The solution was a four-factor solution as shown in Table 60.

The factor solution was robust since the amount of variability accounted for was 72.94. Thus only 17.06% were unexplained by the factor solution. The factors were respectively named “Improvements in performance due to right OC” with an eigenvalue of 4.104 contributing 25.65% of the total variance; “KM enablers due to employee recognition” with an eigenvalue of 2.869 contributing 17.93% of the total variance; “KM enablers due to development and training” with an eigenvalue of 2.501 contributing 15.63% of the total variance; and “General positive KM culture enablers” with an eigenvalue of 2.197 contributing 13.73% of the total variance.

The main reasons were that the OC allowed for consultation across business units and across employees as well consulting the organisational documents. The environment also allowed for good relationships between employees and management.

### 4.7.14. Factor analysis of organisational structure

Table 61: KMO and Bartlett's Test OS

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .715 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 586.358 |
| | df | 15 |
| | Sig. | .000 |

| Communalities | | |
|---|---|---|
| | **Initial** | **Extraction** |
| Q24a). The department's structure or that of a related healthcare entity allow and support employees to accomplish their task. | 1.000 | .794 |
| Q24b). The department provide a better environment for improving the work knowledge of the employees. | 1.000 | .655 |
| Q24c). Sharing of information happens constantly with other business units in formal ways to enable me to do my job well. | 1.000 | .312 |
| Q24d). Sharing of information happens constantly with other colleagues in the department in formal ways to enable me to do my job well. | 1.000 | .494 |
| Q24e). There are ample opportunities for me to interact with my peers in and outside the organisation. | 1.000 | .713 |
| Q24f). There is a formal mentoring program in the organisation. | 1.000 | .630 |

The KMO value was .715, which exceeded the recommended value of .50 and the BTS gave a Chi-square value of X2= 586.358 with degrees of freedom of 15 and

significant p-value of .000 (<.05) (Table 61) thereby supporting the factorability of the correlation matrix and adequate for factor analysis. There were two factors with two eigenvalues exceeding one. Thus, it was a two-factor solution as shown in Table 62. In this case, the communalities ranged from .49 to .79, thus the variables fitted well with each other in their factor.

The factor solution was robust since the amount of variability accounted for was 59.97%. The factors were respectively named “KM practices” due to right OS with an eigenvalue of 2.133 contributing 135.54% of the total variance and “General positive OS as enablers for KM” with an eigenvalue of 1.465 contributing 24.43% of the total variance.

Table 62: Rotated factor solution on OS

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *KM practices due to right organisational structure* | | 2.133 | 35.54% |
| Q24e | There are ample opportunities for me to interact with my peers in and outside the organisation. | .843 | | |
| Q24f | There is a formal mentoring program in the organisation. | .746 | | |
| Q24d | Sharing of information happens constantly with other colleagues in the department in formal ways to enable me to do my job well. | .692 | | |
| Q24c | Sharing of information happens constantly with other business units in formal ways to enable me to do my job well. | .547 | | |
| | **Factor 2:** *General positive organisational structure as an enabler for KM* | | 1.465 | 24.43% |
| Q24a | The department's structure or that of a related healthcare entity allow and support employees to accomplish their task. | .890 | | |
| Q24b | The department provides a better environment for improving the work knowledge of the employees. | .754 | | |
| | **Total variance explained** | | | **59.97%** |

The issues were whether the OS supported and is an enabler of the practices of KM in the department. On both factors, the issues were on HRM practices, as well as opportunities to interact with peers and colleagues to share information for the accomplishment of tasks. This approach that OS directly affects KM practices was supported by Al-Bahussin and El-garaihy (2013) and Zheng *et al.* (2010).

### 4.7.15. Factor analysis of information technology

The data in Table 63 shows that the factor solution had a KMO measure of sampling adequacy of .765. This indicates that the correlations are sufficient for factor analysis. In addition, the Bartlett's test enables us to reject the null hypothesis of lack of sufficient correlation between variables since the X2 =859.898 and a p-value = .000 (<0.05) lead to the rejection of the null hypothesis. Thus, the results from both tests look good and we can proceed with the analysis.

Table 63: KMO and Bartlett's Test – Information Technology

**KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .765 |
| Bartlett's Test of Sphericity | Approx. Chi-square | 859.898 |
| | df | 28 |
| | Sig. | .000 |

**Communalities**

| | Initial | Extraction |
|---|---|---|
| Q25a). The department use modern technologies to enhance the environment for KM practice. | 1.000 | .452 |
| Q25b). The department make periodic knowledge contributions to the shared repository. | 1.000 | .524 |
| Q25c). The employees are made aware of the files in the system that are relevant to their work. | 1.000 | .596 |
| Q25d). The communities of practice (COP) is formally recognised as a tool or technology for knowledge transfer. | 1.000 | .550 |
| Q25e). The discussion forums are formally recognised as a tool or technology for knowledge transfer. | 1.000 | .627 |
| Q25g). The job rotation is formally recognised as a tool or technology for knowledge transfer. | 1.000 | .394 |
| Q25h). The job promotion is formally recognised as a tool or technology for knowledge transfer. | 1.000 | .673 |
| Q25i). There is technological infrastructure that allows free and easy access to knowledge. | 1.000 | .453 |

The communalities indicate the degree to which each variable is participating or contributing to the component solution.

The majority of the communalities were above .6. In this case, two factors were retained. The first factor accounted for 27.00% and the second factor for 26.36%. All in all, the factors accounted for 53.37% of the variance. In practice a robust solution

should account for at least 50% of the variance, or even less in practical research (Hair, *et al.,* 2014). The factor solution is shown in Table 64.

Table 64: Rotated factor solution on information technology

| Code | Factors and observed variables | Loadings | Eigenvalues | % of variance |
|---|---|---|---|---|
| | **Factor 1:** *KM practices due to relevant and appropriate information technology* | | 2.160 | 27.00% |
| Q25h | The job promotion is formally recognised as a tool or technology for knowledge transfer. | .815 | | |
| Q25i | There is technological infrastructure that allows free and easy access to knowledge. | .655 | | |
| Q25g | The job rotation is formally recognised as a tool or technology for knowledge transfer. | .627 | | |
| Q25b | The department makes periodic knowledge contributions to the shared repository. | .612 | | |
| | Factor 2: *ICT as enablers to support KM* | | 2.109 | 26.36% |
| Q25e | The discussion forums are formally recognised as a tool or technology for knowledge transfer. | .791 | | |
| Q25c | The employees are made aware of the files in the system that are relevant to their work. | .770 | | |
| Q25a | The department use modern technologies to enhance the environment for KM practice. | .618 | | |
| Q25d | The communities of practice (CoP) is formally recognised as a tool or technology for knowledge transfer. | .570 | | |
| | **Total variance explained** | | | **53.37%** |

The two factors were respectively named “KM practices due to relevant and appropriate information technology” with an eigenvalue of 2.133 and “ICT as enablers to support KM” with an eigenvalue of 2.109, respectively. The main reason was the relevant and appropriate ICT as an infrastructure and a tool used and was recognised for knowledge transfer and the periodical contribution by the department to the shared repository.

Kruger and Johnson (2010) supported the view that ICT and information management are prerequisites for and enablers of KM.

### 4.7.16. Conclusion of exploratory factor analysis dimensions

The EFA was conducted in this study with no pre-conceived theories or expectations. The KMO & BTS plays an important role for accepting the sample adequacy and the significance of the study, the validity and suitability of the responses collected to the problem being addressed in the study.

All the factor solutions exceeded the recommended minimum value of .5 Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (Hair *et al.,* 2010), while the BTS (Bartlett, 1954) attained degrees of freedom of 36 and statistical significance of $p < .001$, thus, supporting an excellent factorability of the correlation matrix among variables.

Therefore, these results also confirmed that the sample used in the study was adequate, a significant correlation existed between the variables and the Bartlett's test enables us to reject the null hypothesis of lack of sufficient correlation between variables. This indicates also the fulfilment of the requirements of the construct validity of the KM capability (knowledge infrastructure capability and knowledge process capability) and the dimensions were measuring what they should actually measure in preparation of the structural equation modelling.

### 4.8. Tests of normality of the composite variables

The summary statistics for the tests of normality for the fifteen dimensions are presented in Table 65.

The test of normality was done to test whether the data was normally distributed or not. This is used to determine whether parametric or non-parametric tests can be used. The hypothesis to be tested was:

**$H_o$**: The data is normally distributed

**$H_1$**: The data is not normally distributed

The 5% level of significance was used. In this case, a p-value less than 0.05 will lead to the rejection of the null hypothesis.

#### 4.8.1.1. Table 65: Test of normality of composite variables

| Variable | Skewness | Kurtosis | Normality tests (p-value) |
|---|---|---|---|
| Understanding of KM | 0.698 | -0.253 | 0.201 |
| KM strategies operational objectives | 0.098 | -0.458 | 0.490 |
| KM use in the department | 0.321 | -0.132 | 0.257 |
| Effectiveness of KM practices | 0.811 | 0.717 | 0.105 |
| Knowledge creation | 2.4799 | -2.619 | 0.001 |
| Knowledge acquisition | 0.648 | 0.643 | 0.172 |
| Knowledge retention/storage | 0.430 | -0.106 | 0.178 |
| Knowledge distribution | 0.098 | -0.458 | 0.549 |
| Knowledge share/transfer | 0.321 | -0.152 | 0.247 |
| Knowledge application/use | 0.618 | 1.679 | 0.182 |
| OP | 0.282 | -0.586 | 0.062 |
| HSD | 0.644 | 0.006 | 0.053 |
| OC | -0.116 | -0.400 | 0.140 |
| Organisational structure | -0.075 | -0.405 | 0.267 |
| Information technology | 0.110 | -0.646 | 0.195 |

All the variables understanding of KM, management strategies operational objectives, KM use in the department, effectiveness of KM practices, knowledge acquisition, knowledge retention/storage, knowledge-sharing/transfer, knowledge application/use, OP, HSD, OC, OS and information technology respectively had p–values 0.201, 0.490, 0.257, 0.105, 0,172, 0.178, 0.549, 0.247, 0.182, 0.062, 0.053, 0.140, 0.267 and 0.195 respectively. Since all p-values were greater than 0.05, the null hypothesis of normality was not rejected. Thus, the variables were normally distributed.

For the aspect knowledge creation, the p-value was 0.001. Since 0.001 is less than 0.05 the null hypothesis of normality was rejected.

The majority of the variables are normally distributed except one. In this case, the central limit theorem was used since the sample sizes are greater than 30. The central limit theorem states “that as the sample size (i.e., the number of values in the sample) gets large enough, the sampling distribution of the mean is approximately normally distributed. This is true regardless of the shape of the distribution of the individual values in the population” (Berenson, Levine, Krebbiel, Watson, Jayne, Turner & O’Brien, 2010: 48). Thus, parametric tests were used. Independent T-TESTS were

used for the two group categorical data to test whether there were mean differences. ANOVA was used to determine group differences where there are more than two categories. The main reasons were that the OC allowed for consultation across business units and across employees as well as consulting the organisational documents. The environment also allowed for good relationships between employees and management.

## 4.9. Independent T-TEST differences between socio-demographic variables.

The null hypothesis to be tested is:

**$H_o$**: The means are equal

**$H_1$**: The means are different

Only those with significant difference were presented.

### 4.9.1. Independent t-test to determine differences by gender

All the composite variables had p-values greater than .05. Since p-values were all greater than .05, the null hypothesis of equal means was not rejected. Thus, with respect to gender there was no difference in ratings by males and females in all aspects.

### 4.9.2. Independent t-test to determine differences by training received

All the composite variables had p-values greater than .05, except the composite variable knowledge creation. The t-value = -2.619 with a p-value = .011 as shown in Table 66.

Table 66: Independent T-test to determine difference by training received.

| Dimension | Group | Mean | T-value | p-value | Decision |
|---|---|---|---|---|---|
| Knowledge creation | Yes | 2.4799 | -2.619 | 0.011* | Null hypothesis is rejected |
| | No | 2.8826 | | | |
| *P<0.05 and ** p<0.01 | | | | | |

The mean for those who did not receive training was higher than for the one who received training. Thus, the ones who received training were more in agreement than the ones who did not receive any training.

### 4.10. ANOVA test for significant mean differences between variables

In this case, the ANOVA test was used to determine the differences between demographic variables whether dimensions differ by age, current position in organisation, race, years working at organisation, years working in current position and highest academic qualification received. The null hypothesis to be tested was:

$\mathbf{H_o}$: The means are equal

$\mathbf{H_1}$: At least one pair of means differs

The test was done at 5% level of significance. Thus, a p-value less than .05 will lead to difference between means. All those composite variables with significant differences were presented. Where differences exist, post-hoc analysis was done to determine the groups are detected.

#### 4.10.1. ANOVA test to determine mean differences by age

The age of the respondent was classified into four groups; 18–29 years, 30–39 years, 40–49 years and 50 years and above. All composite variables had p –values greater than .05, leading to the null hypothesis of equal means not being rejected. Thus, there were no differences by age on the rating of all composite variables.

### 4.10.2. ANOVA test to determine mean differences by position in organisation

In terms of position in the company, the data was grouped into three groups. These were executive/senior management, middle management/supervisor and non-managerial/non-supervisor. The p-values were all greater than .05 for the composite values and thus the null hypothesis of equal means was not rejected. Thus, position did not affect the ratings of the composite variables.

### 4.10.3. ANOVA test to determine mean differences by race

Ethnicity was grouped into three groups, that is, Black, White and other. The other included Coloureds, Indians and Asians. All the p-values were greater than .05.

The dimension Knowledge transfer had a p-value = .042 leading to rejection of the null hypothesis. The Whites had the highest mean of 3.2837, while Blacks had the lowest mean of 2.7688. The Blacks were more in agreement than the Whites. Boh, Nguyen & Xu (2013) say different KM approaches are required to support knowledge transfer between different cultures. This is supported by the Black and White survey respondents differing on KM transfer and KM measures. Their cultural backgrounds are different.

The information in Table 67 shows that in terms of the dimension on KM measures, the p-value was .05 leading to the rejection of the null hypothesis. The highest mean of 3.0049 was from the Whites while the lowest mean was 2.5457. The Whites were significantly different from the other groups. White people therefore disagreed with the KM measures. KM measures are all about a new way of doing things, i.e. training, KM policy, mentoring etc. Nuseir & Madanat (2017) re-iterate that people do not like change and it does take time and effort to apply new practices. The majority of the long-serving survey respondents are White and their lack of agreement on KM measures confirms that they do not embrace change. The information is shown in Table 67.

Table 67: ANOVA test to determine mean difference by race

| Dimension | Group | Mean | F-value | p-value | Decision |
|---|---|---|---|---|---|
| Knowledge transfer | Black | 2.7688 | 3.307 | 0.042* | Null hypothesis is rejected |
| | White | 3.2837 | | | |
| | Other | 2.8438 | | | |
| KM measure | Black | 2.5765 | 3.126 | 0.05* | Null hypothesis is rejected |
| | White | 3.0049 | | | |
| | Other | 2.5457 | | | |
| *P≤0.05 and ** p<0.01 | | | | | |

### 4.10.4. ANOVA test to determine mean differences by experience

The employees' experience determined by number of years working at the organisation was divided into five groups. The groups were less than a year, 1–2 years, 3–5 years, 6–10 years and above 10 years. The majority of the composite variables had p-values of less than .05. These were Knowledge creation, Knowledge storage, Knowledge distribution, Knowledge transfer, Knowledge application, KM components, KM, Perception on KM, KM aspects, KM enhancers, KM enhancers and hindrances, KM measures, Importance of KM practices, Effectiveness of KM practices and KM practices. The information is shown in Table 68.

Table 68: ANOVA test to determine mean difference by years at organisation

| Dimension | Group | Mean | F-value | p-value | Decision |
|---|---|---|---|---|---|
| Knowledge creation | Less than a year | 2.1049 | 2.716* | 0.036 | Reject the null hypothesis |
| | 1 – 2 years | 2.6282 | | | |
| | 3 – 5 years | 2.6878 | | | |
| | 6-10 years | 2.9417 | | | |
| | Above 10 years | 2.7161 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Knowledge retention/storage | Less than a year | 2.0992 | 5.392** | 0.001 | Reject the null hypothesis |
| | 1 – 2 years | 2.6154 | | | |
| | 3 – 5 years | 2.2500 | | | |
| | 6-10 years | 2.9205 | | | |
| | Above 10 years | 2.8433 | | | |
| Knowledge distribution | Less than a year | 1.9636 | 3.614* | 0.010 | Reject the null hypothesis |
| | 1 – 2 years | 2.4385 | | | |
| | 3 – 5 years | 2.3375 | | | |
| | 6-10 years | 2.7965 | | | |
| | Above 10 years | 2.6429 | | | |
| Knowledge share/transfer | Less than a year | 2.2614 | 3.955** | 0.006 | Reject the null hypothesis |
| | 1 – 2 years | 2.8462 | | | |
| | 3 – 5 years | 2.8594 | | | |
| | 6-10 years | 3.4141 | | | |
| | Above 10 years | 3.1091 | | | |
| Knowledge application/use | Less than a year | 2.2314 | 2.850* | 0.030 | Reject the null hypothesis |
| | 1 – 2 years | 2.5944 | | | |
| | 3 – 5 years | 2.3523 | | | |
| | 6-10 years | 2.9489 | | | |
| | Above 10 years | 2.6792 | | | |
| Knowledge management components | Less than a year | 2.1235 | 4.295** | 0.004 | Reject the null hypothesis |
| | 1 – 2 years | 2.5651 | | | |
| | 3 – 5 years | 2.4803 | | | |
| | 6-10 years | 2.9205 | | | |
| | Above 10 years | 2.7227 | | | |
| Understanding of Knowledge management | Less than a year | 2.2909 | 3.960** | 0.006 | Reject the null hypothesis |
| | 1 – 2 years | 2.5231 | | | |
| | 3 – 5 years | 2.3333 | | | |
| | 6-10 years | 3.1750 | | | |
| | Above 10 years | 2.6857 | | | |
| Perception on knowledge management | Less than a year | 2.2576 | 3.595* | 0.010 | Reject the null hypothesis |
| | 1 – 2 years | 2.3750 | | | |
| | 3 – 5 years | 2.2778 | | | |
| | 6-10 years | 2.6458 | | | |
| | Above 10 years | 2.7857 | | | |
| Knowledge management aspects | Less than a year | 2.2727 | 4.353** | 0.003 | Reject the null hypothesis |
| | 1 – 2 years | 2.4459 | | | |
| | 3 – 5 years | 2.3030 | | | |
| | 6-10 years | 2.8864 | | | |
| | Above 10 years | 2.7403 | | | |
| Knowledge management enhancers | Less than a year | 2.6591 | 3.500* | 0.012 | Reject the null hypothesis |
| | 1 – 2 years | 2.6458 | | | |
| | 3 – 5 years | 3.1500 | | | |
| | 6-10 years | 3.5156 | | | |
| | Above 10 years | 3.3214 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Knowledge management enhancers and hindrances | Less than a year | 2.2857 | 3.498* | 0.012 | Reject the null hypothesis |
| | 1 – 2 years | 2.4524 | | | |
| | 3 – 5 years | 2.8190 | | | |
| | 6-10 years | 3.0536 | | | |
| | Above 10 years | 2.9320 | | | |
| Knowledge management measures | Less than a year | 2.2263 | 3.785** | 0.008 | Reject the null hypothesis |
| | 1 – 2 years | 2.8718 | | | |
| | 3 – 5 years | 2.4780 | | | |
| | 6-10 years | 3.1659 | | | |
| | Above 10 years | 2.7799 | | | |
| Importance of knowledge management practices | Less than a year | 1.9545 | 2.640* | 0.041 | Reject the null hypothesis |
| | 1 – 2 years | 1.9667 | | | |
| | 3 – 5 years | 1.6250 | | | |
| | 6-10 years | 2.3688 | | | |
| | Above 10 years | 2.1476 | | | |
| Effectiveness of knowledge management | Less than a year | 2.1288 | 3.763** | 0.008 | Reject the null hypothesis |
| | 1 – 2 years | 2.4306 | | | |
| | 3 – 5 years | 1.9635 | | | |
| | 6-10 years | 2.7500 | | | |
| | Above 10 years | 2.7540 | | | |
| Knowledge management practices | Less than a year | 2.0496 | 4.109** | 0.005 | Reject the null hypothesis |
| | 1 – 2 years | 2.2197 | | | |
| | 3 – 5 years | 1.8097 | | | |
| | 6-10 years | 2.5767 | | | |
| | Above 10 years | 2.4784 | | | |
| *P≤0.05 and ** p<0.01 | | | | | |

In terms of the composite variable Knowledge creation, the F-value = 2.716 with a p-value = 0.036. Since 0.036 is less than 0.05, the null hypothesis of equal means was rejected. Thus, the means differ by years at the organisation. The post-hoc analysis resulted in two homogenous groups as indicated in Table 69.

Table 69: Homogeneous groups for Knowledge creation

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.1049 | |
| 1 - 2 years | 12 | 2.6282 | 2.6282 |
| 3 - 5 years | 17 | 2.6878 | 2.6878 |
| Above 10 years | 21 | 2.7161 | 2.7161 |
| 6 - 10 years | 16 | | 2.9417 |

The main significant difference was between those who have stayed less than a year and those who have stayed 6–10 years. The ones who have just joined the organisation agree, while the 6–10 years were more neutral. This can mean that either these knowledge creation measures are fairly new to the organisation or they were once practised and hence the older employees are neutral about them. Nonaka SECI model states that knowledge creation should be a continuous process as people interact. It seems that this is not the case in the organisation.

The composite variable Knowledge retention/storage, had an F-value = 5.392 with a p-value = 001. Since 0.001 is less than 0.05, the null hypothesis of equal means was rejected. Thus, the means differ by years at the organisation. The post-hoc analysis is indicated in Table 70.

Table 70: Homogeneous groups for knowledge retention/storage

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.0992 | |
| 3 - 5 years | 16 | 2.2500 | |
| 1 - 2 years | 13 | 2.6154 | 2.6154 |
| Above 10 years | 21 | | 2.8433 |
| 6 - 10 years | 16 | | 2.9205 |

The lowest average was 2.0992 from those less than a year and the highest average was 2.920 from those with 6–10 years at the organisation. There were two homogeneous groups. The first group consisted of those who had at most 5 years at the organisation and the second group consisted of 1–2 years, above 10 years and 6–10 years. Those who joined the organisation late were more in agreement with the aspects on knowledge storage than those who have been in the organisation for more than five years. It can be concluded that the knowledge storage philosophy is quite new and hence only newer people are aware of it. This indicates deficiencies in terms of communication.

In terms of the aspect Knowledge distribution, the survey respondents who have been at the organisation for at most 5 years were in agreement. The averages for the groups

less than a year, 3–5 years and 1–2 years were1.9636, 2,.4385 and 2.3375, respectively. The means are close to two (agree), thus survey respondents were in agreement on knowledge distribution. Table 71 shows the homogeneous groups.

Table 71: Homogeneous groups for knowledge distribution

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 1.9636 | |
| 3 - 5 years | 16 | 2.3375 | 2.3375 |
| 1 - 2 years | 13 | 2.4385 | 2.4385 |
| Above 10 years | 21 | | 2.6429 |
| 6 - 10 years | 16 | | 2.7965 |

There were two homogeneous groups, those who have at most 5 years at work and those who have been at least a year at work. The major difference was between those who have 'less than a year' who were in agreement and those who had 6–10 years who were neutral. Newer employees agreed to knowledge being distributed to them. This is a positive aspect. It can mean this is a totally new philosophy, or it used to exist in the past.

The aspect Knowledge share/transfer had two homogeneous groups. The lowest mean was 2.2614 from those with 'less than a year' at the organisation and the highest mean was 3.4141 from those with 6–10 years at work, as shown in Table 72.

Table 72: Homogeneous groups for knowledge share/transfer

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.2614 | |
| 1 - 2 years | 13 | 2.8462 | 2.8462 |
| 3 - 5 years | 16 | 2.8594 | 2.8594 |
| Above 10 years | 21 | | 3.1091 |
| 6 - 10 years | 16 | | 3.4141 |

Those who have just joined the organisation had a mean close to 2 signifying agreement to a large extent, while the rest of the other categories had means close to

3 signifying neutral. This confirms that this is probably a new initiative. Krylova *et al.* (2016) argue that knowledge transfer should be a proactive and not a reactive process. It seems this aspect has been mastered, as the newer employees are in agreement that knowledge transfer does exist.

For the aspect knowledge application, the null hypothesis of equal means was rejected. The F-value = 2.850 and the p-value = .006. It was highly significant. Table 73 gives the homogeneous groups.

Table 73: Homogeneous groups for knowledge application/use

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.2314 | |
| 3 - 5 years | 16 | 2.3523 | 2.3523 |
| 1 - 2 years | 13 | 2.5944 | 2.5944 |
| Above 10 years | 21 | 2.6792 | 2.6792 |
| 6 - 10 years | 16 | | 2.9489 |

The same pattern was observed less where the group ‘less than a year’ had the lowest mean of 2.2314 and the group 6–10 had the highest mean of 2.9489. Looking at Table 54, the groups ‘less than a year’ and 3–5 years agreed on the aspects on knowledge application, while those who have been at the organisation 1–2 years, above 10 years and 6–10 years had means close to 3 indicating that they were neutral. Once again, this indicates that knowledge application is probably a new philosophy in the organisation.

Table 74: Homogeneous groups for KM components

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.1235 | |
| 3 - 5 years | 17 | 2.4803 | 2.4803 |
| 1 - 2 years | 13 | 2.5651 | 2.5651 |
| Above 10 years | 21 | | 2.7227 |
| 6 - 10 years | 16 | | 2.9205 |

In terms of KM components, the null hypothesis of equal means was rejected since the F-value = 4.295 and the p-value = .004. It was highly significant. The information is depicted in Table 74.

Survey respondents who had ‘less than a year’ and 3–5 years at the organisation had means close to 2. This means they were in agreement and that the other categories were neutral. The major difference was between those ‘less than a year’ and those 6–10 years. This confirms that there is probably a new shift that has occurred in terms of KM components. The newer employees are quite satisfied, while the older employees are not so sure. Understanding of KM components form the backbone for a successful KM system, therefore it is important that all employees are fully on-board about all these aspects.

Table 75: Homogeneous groups for understanding of KM

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.2909 | |
| 3 - 5 years | 15 | 2.3333 | |
| 1 - 2 years | 13 | 2.5231 | 2.5231 |
| Above 10 years | 21 | 2.6857 | 2.6857 |
| 6 - 10 years | 16 | | 3.1750 |

There were two homogeneous groups for the aspect KM. The lowest mean was 2.2909 from those ‘less than a year’ and the highest mean was 3.1750 from those 6–10 years as shown in Table 75.

The ‘less than a year’ and 3–5 years were in agreement on the KM, where the others were neutral. Those ‘less than year’ and 3–5 years at the organisation are significantly different from those 6–10 years. Once again, newer employees have a different view to the older employees.

Table 76: Homogeneous groups for perception on KM

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.2576 | |
| 3 - 5 years | 15 | 2.2778 | 2.2778 |
| 1 - 2 years | 12 | 2.3750 | 2.3750 |
| 6 - 10 years | 16 | 2.6458 | 2.6458 |
| Above 10 years | 21 | | 2.7857 |

The aspect on Perception on KM gave two homogeneous groups in Table 76.

Those who have been with the organisation for 'less than a year' had the lowest mean of 2.2570, while those with more than 10 years had the highest mean of 2.7857. The major differences were between the 'less than a year' and those above 10 years since they did not belong to the same group. Those who had just joined the organisation were more in agreement than those who have been more than 10 years at the organisation, who were neutral. It is very concerning to see these different views. It is clear that there is misalignment within the organisation. It will be difficult to implement a successful system within an organisation where there are these extreme views and opinions.

Table 77: Homogeneous groups for KM aspects

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.2727 | |
| 3 - 5 years | 15 | 2.3030 | |
| 1 - 2 years | 13 | 2.4459 | 2.4459 |
| Above 10 years | 21 | 2.7403 | 2.7403 |
| 6 - 10 years | 16 | | 2.8864 |

The dimension KM aspects had two homogeneous groups as shown in Table 77. The lowest mean was 2.2727 from those 'less than a year' while the highest mean was 2.8864 from those 6–10 years. The mean of those above 6 years was 3 indicating that they were neutral, while those who have been at the organisation for at most 5 years had means close to 2, thus we conclude that they were in agreement. The major difference was between 'less than a year' and 6–10 years.

In terms of the aspect KM enhancers, the F-value = 3.500 with a p-value = .012. The null hypothesis of equal means was rejected since .012 is less than .05. The post-hoc analysis had two homogeneous groups as shown in Table 78.

Table 78: Homogeneous groups for KM enhancers

| Q5. Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| 1 - 2 years | 12 | 2.6458 | |
| Less than a year | 11 | 2.6591 | |
| 3 - 5 years | 15 | 3.1500 | 3.1500 |
| Above 10 years | 21 | 3.3214 | 3.3214 |
| 6 - 10 years | 16 | | 3.5156 |

The lowest mean was 2.6458 for 1–2 years at the organisation and the highest mean was 3.5156 for those with 6–10 years. The other group had a mean close to 3 indicating that they were neutral while the 6–10 years had a mean close to 4 indicating that they disagreed.

Those who had been at the organisation for at most two years are significantly different from those at the organisation for 6–10 years. The newer employees agreed that the organisation was taking steps to enhance employees to better manage organisational knowledge. It is clear that this is probably a new philosophy that is being implemented.

Table 79: Homogeneous groups for KM enhancers and hindrances

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.2857 | |
| 1 - 2 years | 12 | 2.4524 | 2.4524 |
| 3 - 5 years | 15 | 2.8190 | 2.8190 |
| Above 10 years | 21 | 2.9320 | 2.9320 |
| 6 - 10 years | 16 | | 3.0536 |

The composite variable for Knowledge enhancers and hindrances had an F-value = 3.498 with a p-value = .012. Thus, the null hypothesis of equal means was rejected and two homogeneous groups were constructed as shown in Table 79.

Survey respondents who have less than a year (2.2857) and 1-2 years (2.4524) were in agreement on the issue of KM enhancers and hindrances. Those with 6–10 years at the organisation had a mean of 3.0536 showing that on the average they were neutral. It seems as if those who have just joined the company were the ones in agreement.

There were two homogeneous groups on the aspect KM measures as shown below in Table 80.

Table 80: Homogeneous groups for KM measures

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Less than a year | 11 | 2.2263 | |
| 3 - 5 years | 16 | 2.4780 | 2.4780 |
| Above 10 years | 21 | 2.7799 | 2.7799 |
| 1 - 2 years | 12 | 2.8718 | 2.8718 |
| 6 - 10 years | 16 | | 3.1659 |

Those who have been at the organisation for 6–10 years had the highest mean of 3.1659 while those who have been less than a year had the second highest mean of 2.2263. Those who had less than a year at the organisation were significantly different from those who had 6–10 years. The categories ‘less than a year’ and 3–5 years had means close to 2 which means they were in agreement. Once again, there were vast variances in terms of agreement to KM measures. These are probably new measures that are implemented and maybe the older employees are not aware of them. The organisation has probably worked on the newer employees and reformed these aspects, while the older employees are left in the dark.

In terms of Importance of KM practices, the null hypothesis of equal means was rejected since the F-value = 2.640 and p-value = .041. The information is shown in Table 81.

All the categories had means equal to 2 indicating that the survey respondents regard the KM practices (see below) as important, however the depth of importance differs.

Table 81: Homogeneous groups for importance of KM practices

| Q5. Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| 3 - 5 years | 16 | 1.6250 | |
| Less than a year | 11 | 1.9545 | 1.9545 |
| 1 - 2 years | 12 | 1.9667 | 1.9667 |
| Above 10 years | 21 | 2.1476 | 2.1476 |
| 6 - 10 years | 16 | | 2.3688 |

The survey respondents who had 3–5 years at the organisation had the lowest mean of 1.6250 and those who had 6–10 years had the largest mean of 2.3688. Those with 3–5 years regarded the issues as more important than those with 6–10 years. The groups were significantly different. The major variances are concerning as this indicates the misalignment of the positions of employees in connection with these important aspects. As supported by (Beckfield, Olafsdottir & Sosnaud, 2013), it indicates a poor management philosophy.

Table 82: Homogeneous groups for effectiveness of KM practices

| Q5. Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| 3 - 5 years | 16 | 1.9635 | |
| Less than a year | 11 | 2.1288 | 2.1288 |
| 1 - 2 years | 12 | 2.4306 | 2.4306 |
| 6 - 10 years | 16 | | 2.7500 |
| Above 10 years | 21 | | 2.7540 |

The aspect Effectiveness of KM practices had an F – value = 3.763 with a p- value = .008. It was highly significant. There were two homogeneous groups formed as shown in Table 82.

All those who had been working at the organisation for a maximum of 5 years had means close to 2 while those who have worked for more than 5 years had a mean close to 3. Those who entered the organisation within the last 5 years indicated that they were effective while those who entered the organisation more than 5 years ago indicated that they were somewhat effective. The 3–5 year workforce differs

significantly from those who have been there for more than five years. The major variances are concerning as this indicates the misalignment of employees' positions in connection with these important aspects. As supported by (Beckfield *et al.,* 2013) this indicates poor management philosophy.

In terms of the aspect on KM practices, two homogeneous groups were formed as in Table 83. The lowest mean was 1.81 from those who had 3–5 years at the organisation and the highest mean was 2.58 from those who had 6–10 years. The 3–5 years are significantly different from those with 6 years or more experience.

Table 83: Homogeneous groups for KM practices

| Number of years working at organisation: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| 3 - 5 years | 16 | 1.81 | |
| Less than a year | 11 | 2.05 | 2.05 |
| 1 - 2 years | 12 | 2.22 | 2.22 |
| Above 10 years | 21 | | 2.48 |
| 6 - 10 years | 16 | | 2.58 |

Once again, newer employees agreed with the existing KM practices while the older ones did not. It can be deduced from these results that younger employees either understand the importance of KM practices better, or what is practised in the organisation is regarded as irrelevant by some employees.

### 4.10.5. ANOVA test to determine mean differences by current position

Years working at current organisation in the same position were grouped into four groups. The groups were less than a year, 1-2 years, 3–5 years and above 5 years. All the p-values were greater than .05 leading to the non-rejection of the null hypothesis. Thus, the years in current position did not affect the mean ratings.

### 4.10.6. ANOVA test to determine mean differences by academic qualification

The highest academic qualification was arranged into three groups. These were matric and below, degree/post graduate degree and diploma/certificate. All the p-values were

greater than .05 except for the composite variables Knowledge creation. The dimension Knowledge creation, had a p-value = .032 leading to rejection of the null hypothesis. The information is shown in Table 84.

Table 84: Homogeneous group for Knowledge creation

| What is the highest academic qualification achieved: | N | Sub-set for alpha = 0.05 | |
|---|---|---|---|
| | | 1 | 2 |
| Matric and below | 28 | 2.3989 | |
| Degree/Post graduate degree | 22 | 2.6754 | 2.6754 |
| Diploma/certificate | 26 | | 2.8846 |

Those with matric and below had the lowest mean of 2.3980 while the diploma/certificate had the highest mean of 2.8846. The major difference was between matric and below and diploma/certificate. The matric and below agreed with the concept of knowledge creation in the organisation. It seems that the more qualified employees are looking for much more different measures of knowledge creation. It appears that the basic principles that are in place are not stimulating enough for them. Von Krogh, Nonaka and Rechsteiner (2012) believed that employees should understand and buy into the vision of the company. The disagreement of the more qualified employees indicates their misalignment to the company vision.

### 4.11. Confirmatory Factor Analysis and Structural equation modelling

The dimensions with Likert-type questions were used in SEM. The items that were retained in exploratory factor analysis were used in SEM. According to Hair *et al.* (2014), SEM is a multivariate technique combining aspects of factor analysis and multiple regression that enables the researcher to simultaneously examine a series of inter-related dependence relationships among the measured variables and latent constructs (as well as) between several latent variables. It is therefore a collection of different statistical models that seeks to explain and examine the inter-relationships among multiple dependent and independent variables simultaneously (Marsh *et al.,* 2014; Hair *et al.,* 2014; Schmitt, 2011). The researcher deemed it essential to first assess the important aspects in fitting hypothesised models by testing the model fitting process, the statistical significance of constructs, the estimation process and the

goodness-of-fit statistics. In this study, CFA first-order examination was conducted, followed by CFA second-order assessment and then SEM.

SEM has two components: a measurement model that relates measured variables to factors and a structural that concerns hypothesised relationships among the constructs (Mavridis & Salanti, 2013; Tabachnick & Fidell, 2013; Dugard, Todman & Staines, 2010). Thus, SEM involves two stages. The first stage is confirming the measurement theory and CFA is used to provide a confirmatory test for the measurement theory (Hair *et al.,* 2014). The authors went on to say that CFA is a way of testing how well measured variables represent a smaller number of constructs and that it is a tool that enables one either to “confirm” or “reject” the preconceived theory. SEM is then applied at the second stage, which is the structural model.

The maximum likelihood method was used to estimate the SEM and it is one of the most common methods. The maximum likelihood estimate consists of flexible approaches to parameter estimation in which the “most likely” parameter values achieve the best model fit that are found (Hair *et al.,* 2014). It is very reliable when all the assumptions are met.

Table 85 shows the goodness-of-fit tests that can be measured using a number of measures, such as:

- Chi-square test
- CFI (Comparative Fit Index)
- RMSEA (Root Mean Square error of approximation)
- TLI (Tucker Lewis Index)
- GFI (Goodness of Fit Index)
- And many more like IFI (Incremental Fit Index), NFI (Normed Fit Index), AGFI (Adjusted GFI)

Table 85: Summary of Goodness-of-fit Indices used in the research

| Name | Abbreviation | Type | Acceptable Level |
|---|---|---|---|
| Chi-square (with its associated degree of freedom and probability of significance differences) | $x^2(df, p)$ | Absolute fit | $p > 0.05$ (at $\alpha = 0.05$ |
| Goodness-of-fit index | GFI | Absolute fit | ≥ 0.90 |
| Root mean square error approximation | RMSEA | Absolute fit | ≤ 0.05 is good<br>≤ 0.08 is adequate |
| Comparative-fit-index | CFI | Incremental fit | ≥ 0.90 |

Source: Hair *et al.* (2014), Schmitt (2011)

The goodness-of-fit indices in Table 85 show the indices used for the statistical model and describes how well it fits a set of observations. Measures of goodness-of-fit typically summarise the discrepancy between observed values and the values expected under the model in question (Hair *et al.,* 2010). Such measures were used in the hypothesis testing. The Chi-square (χ2) estimated the difference between the covariances produced by the proposed model and the expected covariances based on theory.

Although this type of statistical index is the most important one to assess fit of the model, it has been criticized for being too sensitive to sample size (Hair *et al.,* 2010), particularly in cases where sample size is more than 200 (Hair *et al.,* 2014). Level of acceptances p>0.05 means the sample is sensitive to large sample sizes. Therefore, researchers do not solely utilise the value of Chi-square to reject or accept their models but utilise it in conjunction with other indices to assess overall fit. However, this index is not adjusted for degrees of freedom (Hair *et al.,* 2010). It ranges from 0 (indicating a poor fit) to 1 (indicating a perfect fit) and the recommended level of acceptance is 0.90 (Hair *et al.,* 2010). Values close to 0 indicate poor fit, while values close to 1 indicate a perfect fit.

a) Chi-square test

The Chi-square statistic (χ2) is the test of absolute fit of the model. It is the overall measure of evaluating the overall model and is a measure of difference between the observed and estimated covariance matrices (Hair *et al.,* 2014). The model fits the

data if the p-value is more than .05, that is, the model is non-significant. Although this type of statistical index is the most important one to assess fit of the model, it has been criticised for being too sensitive to sample size (Hair *et al.,* 2010), particularly in cases where sample size is more than 200 (Hair *et al.,* 2014).

b) Comparative fit index (CFI)

The Comparative Fit Index (CFI) compares the covariance matrix predicted by the model to the observed covariance matrix. The CFI is an incremental fit index that is an improved version of the normed fit index revised (Hair *et al.,* 2014). It takes into account sample size that performs well even when sample size is small. It ranges from 0 to 1 with values close to 1 indicating a better fit and values close to 0 indicate a poor fit. CFI values above 0.90 are usually associated with a model that fits well (Hair *et al.,* 2014)

c) Root Mean Square error of approximation (RMSEA)

Root Mean Square Error of Approximation (RMSEA) measures discrepancy per degree of freedom. The closer to zero the value of Root Mean Square Error of Approximation (RMSEA) can be considered as a good fit, values between .05 and .08 as an adequate fit and values between .08 and .10 as a mediocre fit, whereas values > .10 are not acceptable. This test is the most widely used measure that attempts to correct for the tendency of the Chi-square test statistic to reject models with a larger sample size or large number of observed variables (Hair *et al.,* 2014). It tells us how well a model fits the population. The lower values of RMSEA indicate a better fit. There have been many debates in terms of the cut-off point. According to Hair *et al.* (2014), previous research has pointed to a cut-off value of .05 or .08. Values close to zero indicate a better fit.

d) Goodness-of-fit index (GFI)

The Goodness-of-Fit index (GFI) indicates the relative amount of variance and covariance together explained by the model. There is no single statistical test in SEM that can best describe the strength of the model's predictions (Marsh *et al.,* 2014;

Schmitt, 2011). Accordingly, multiple-fit indices should be used to assess goodness-of-fit and final results. The GFI indices indicate the extent to which the theoretical model is similar to the reality (sample data). This means that the similar or closer the values of the estimated covariance matrix are to the observed covariance (reality), the better is the middle fit (Hair *et al.,* 2014). The GFI is less sensitive to sample size. It ranges from 0 to 1 with higher values indicating better fit (Hair *et al.,* 2014). The GFI should be above .90 for acceptable theories but others argue that .95 should be used (Hair *et al.,* 2014). The adjusted version (AGFI) has similar interpretation.

Other indices that are expected to be as close as possible to one (and not below 0.9) are:

- NFI (Normed Fit Index TLI)
- Relative Fit Index (RFI)
- Incremental Fit Index (IFI)
- Tucker Lewis Index (TLI)) and
- Many more like IFI (Incremental Fit Index).

### Confirmatory factor analyses

CFA is defined by Marsh *et al.* (2014) as a multivariate statistical procedure that is used to assess how well the measured variables represent the number of constructs.

CFA and EFA are the two techniques of factor analysis. But in EFA, data is simply explored and provides information about the numbers of factors required to represent the data. It attempts to discover the nature of the constructs influencing a set of responses. In EFA, all measured variables are related to every latent variable, whereas CFA is a tool that is used to confirm or reject the measurement theory.

In this study, the measurement model (CFA) was conducted first to provide a confirmatory test for each of the five constructs.

### 4.11.1. CFA output model for the Level of understanding of KM

CFA was done to the dimensions. According to Hair *et al.* (2014), standardised loading estimates should be .5 or higher and ideally .7 or higher.

All factor loadings were above .5 as shown in Figure 28. The results of CFA showed that the model fit indices satisfy the conditions of a good fit. The Chi-square value was 1.025 with 1 degree of freedom and a p-value of .311 which is above .05, thus insignificant. Thus, the χ2 goodness-of-fit test showed that there was no significant difference between the observed covariance matrix matched and the estimated covariance matrix within the sample. The value of CFI was 1.00, while GFI was .999 and RMSEA (badness-of-fit) was .0085. The results indicated that the measurement model provided a reasonably good fit.

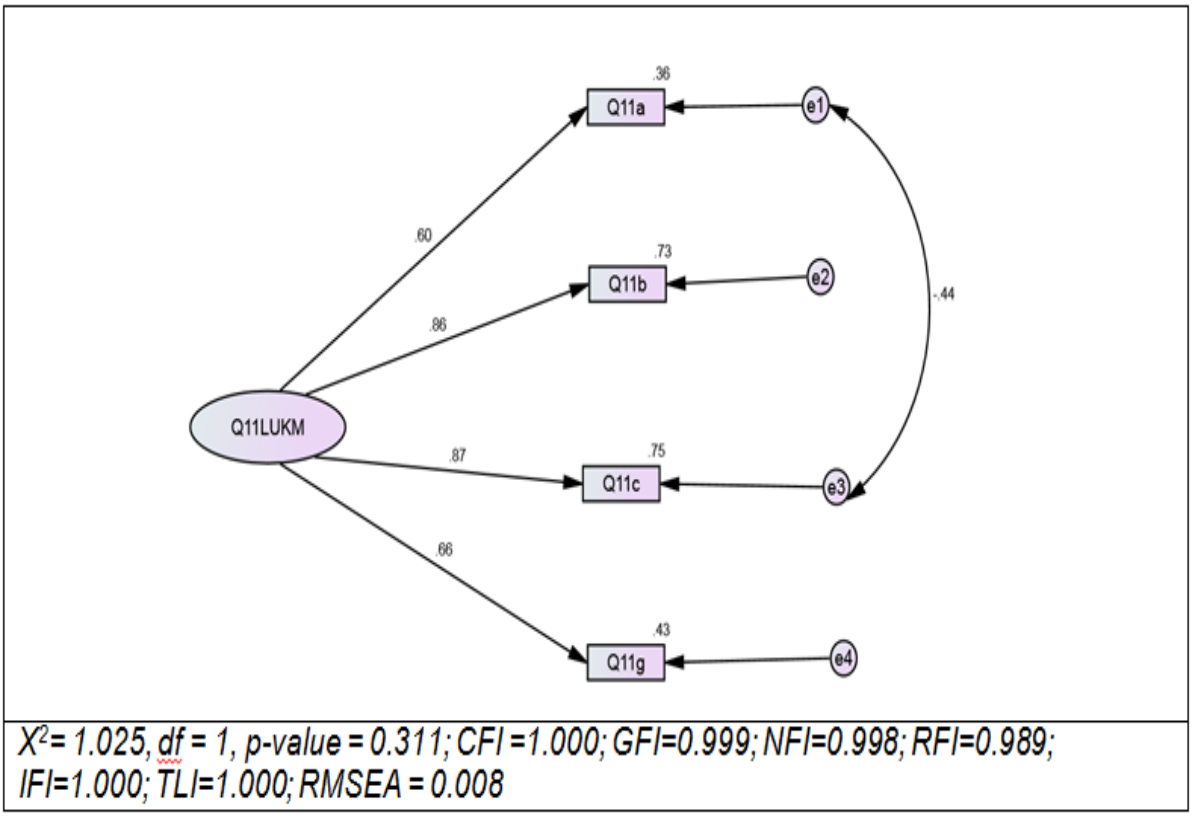



Figure 28: CFA analysis output model for the Level of understanding of KM

### 4.11.2. CFA output model for KM strategies operational efficiencies

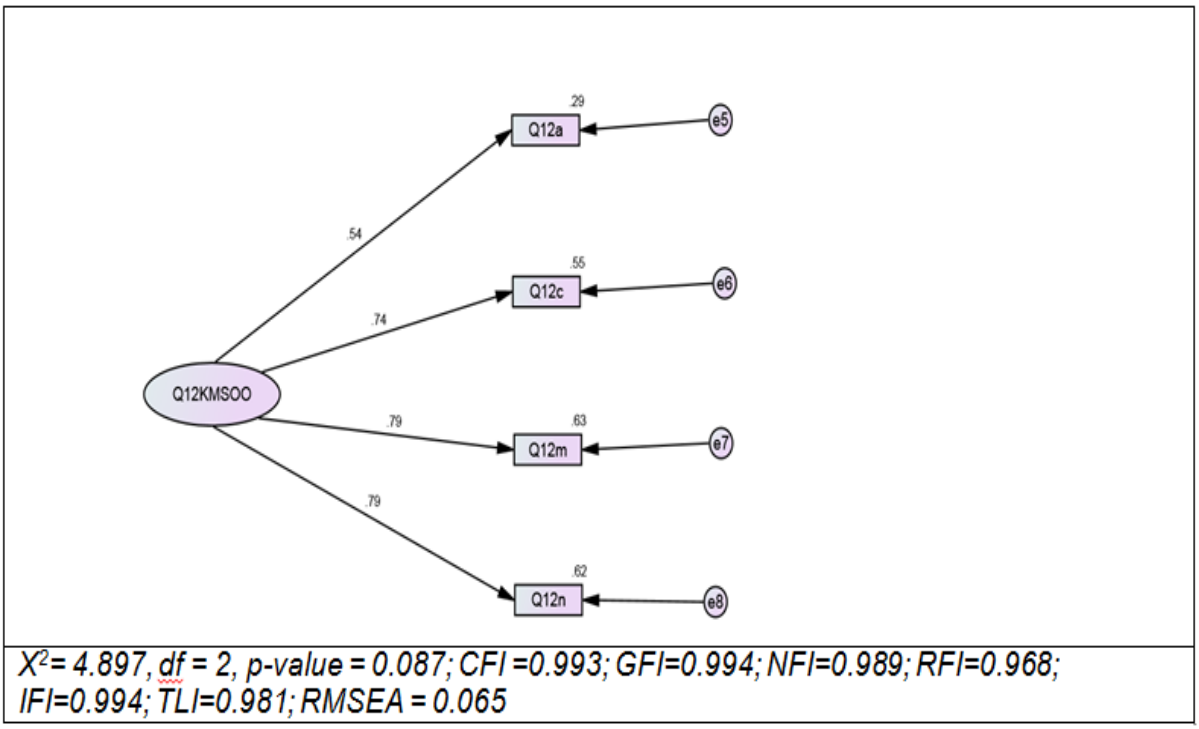



Figure 29: CFA output model for KM strategies operational efficiencies

All the factor loadings CFA output model for KM strategies were above .5 as shown in Figure 29. The Chi-square value was 4.897 with 2 degrees of freedom. The p-value of the Chi-square test was insignificant as evidenced by a value of .087. Thus, the $\chi 2$ goodness-of-fit statistic indicated that the observed covariance matrix matched the estimated covariance matrix within sampling variance. The CFI was .993 while the values for absolute fit indices were .994 for GFI (goodness-of-fit) and .065 for RMSEA (badness-of-fit). These results suggested that the measurement model of KM strategies operational efficiencies provided a reasonably good fit.

### 4.11.3. CFA output model for KM use in department

The CFA solution was composed of four variables as indicated in Figure 30 with factor loadings that range from .71 to .86. The results of CFA showed that the model fit indices satisfy the conditions of a good fit. The Chi-square value was 2.029 with 2 degrees of freedom and an insignificant p-value of .331.

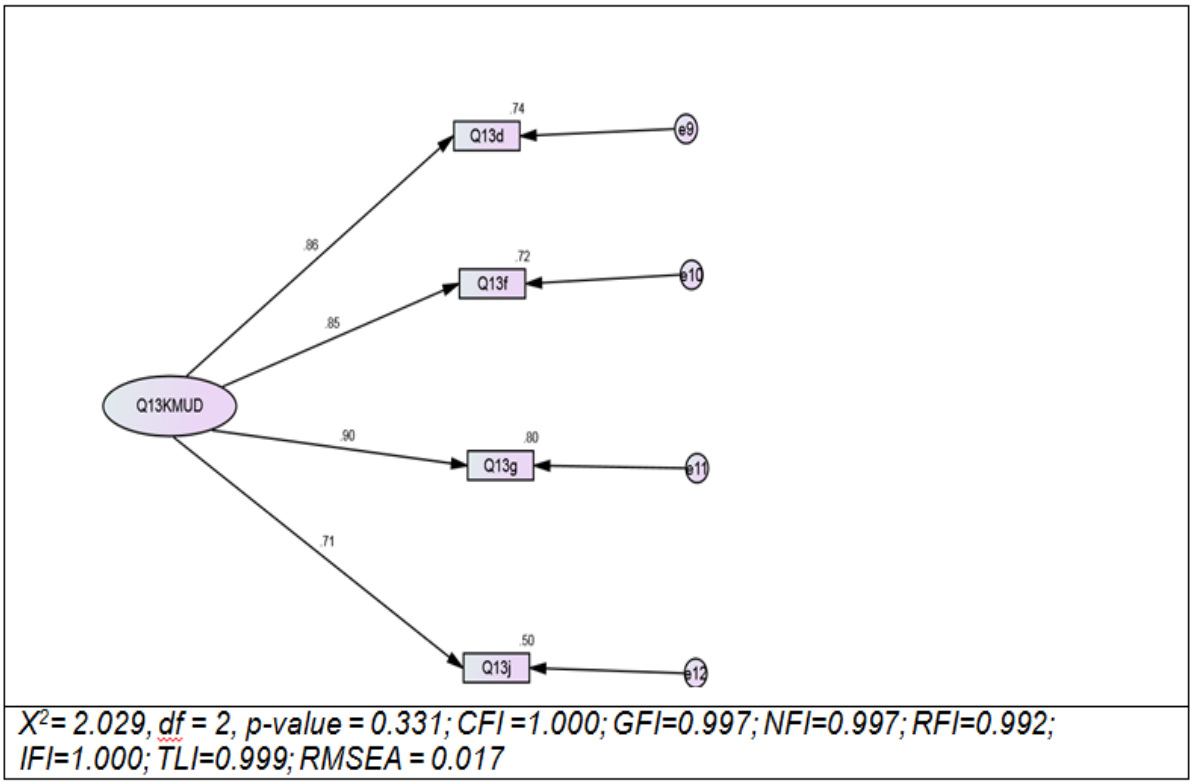



Figure 30: CFA output model for KM use in department

In addition, the CFI was 1.000 and the values of absolute fit indices were .997 for GFI (goodness-of-fit) and .017 for RMSEA (badness-of-fit). The result suggested that the measurement model of KM use in the department provided a reasonably good fit.

### 4.11.4. CFA output model for Effectiveness in KM practices

The four variables had factor loadings that ranged from .56 to .85 (Figure 31). Thus, all factor loadings were above .5. The Chi-square gave a value of .367 with 2 degrees of freedom and a p-value of .832. Thus, the χ2 goodness-of-fit statistic indicated that the observed covariance matrix matched the estimated covariance matrix within sampling variance.

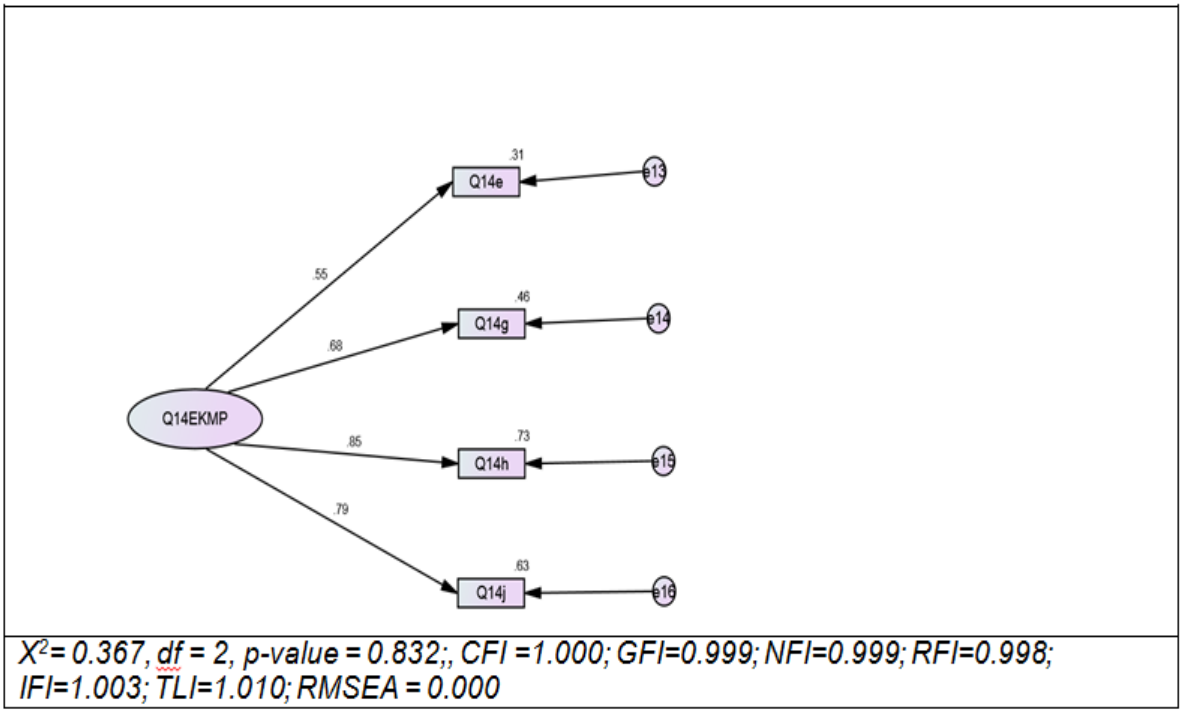



Figure 31: CFA output model for Effectiveness in KM

The value of CFI was 1.00, while GFI was .999 and RMSEA (badness-of-fit) was .00. The results indicated that the measurement model provided a reasonably good fit.

### 4.11.5. CFA output model for Knowledge creation

The factor solution had two variables with factor loadings below .50 (Figure 32). The Chi-square value is 1.576 with 2 degrees of freedom and the p-value associated with this result is insignificant at p=.455. Thus, the χ2 goodness-of-fit statistic indicated that the observed covariance matrix matched the estimated covariance matrix within sampling variance. However, given that only two variables have factor loadings less than .5, the dimension knowledge creation will not be used in the final model.

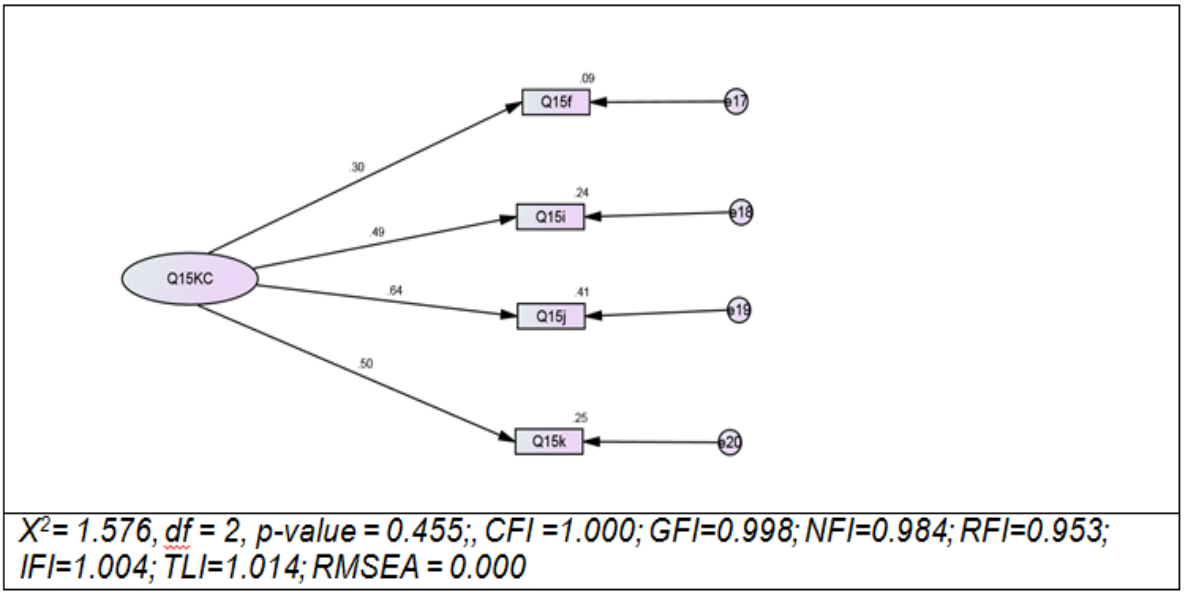



Figure 32: CFA output model for Knowledge creation

### 4.11.6. CFA output model for Knowledge acquisition

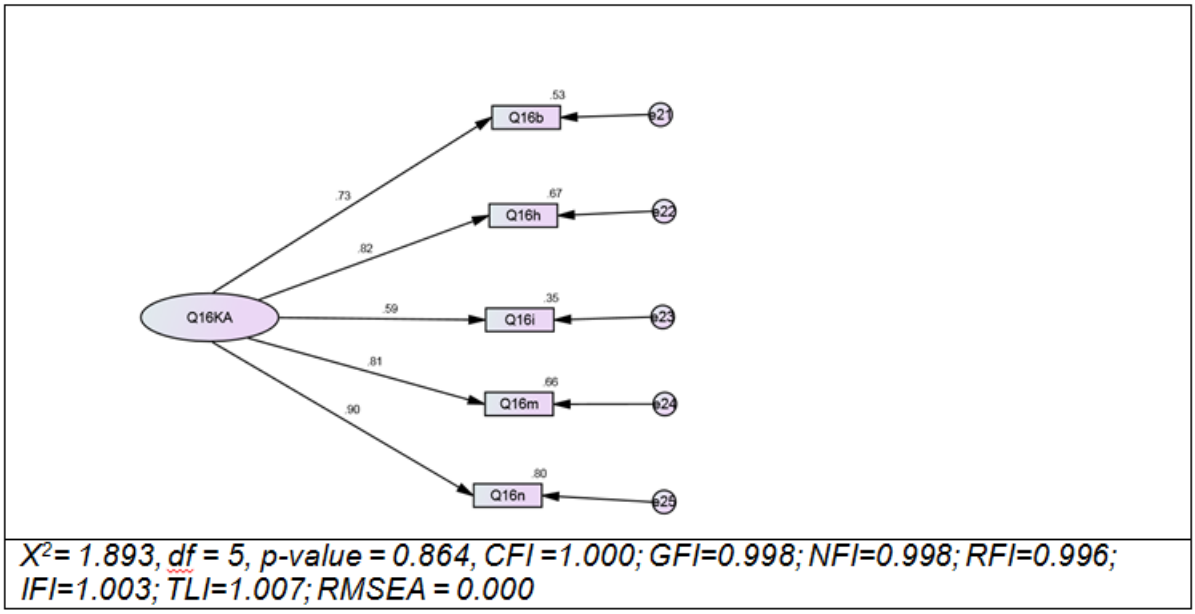



Figure 33: CFA output model for Knowledge acquisition

There were five variables measuring the construct (Figure 33). All variables had factor loadings greater than .5. The Chi-square value had a value of 1.893 with 5 degrees of freedom and an insignificant p-value of .864.

Thus, the χ2 goodness-of-fit test showed that there was no significant difference between the observed covariance matrix matched and the estimated covariance matrix within the sample.

The value of CFI was 1.00, while GFI was .998 and RMSEA (badness-of-fit) was .000. The results indicated that the measurement model provided a reasonably good fit.

### 4.11.7. CFA output model for Knowledge share/transfer

All factor loadings were above .6 (Figure 34). The results of CFA showed that the model fit indices satisfy the conditions of a good fit. The Chi-square value was 3.685 with 2 degrees of freedom and a p-value of .158 which is above .05, thus insignificant.

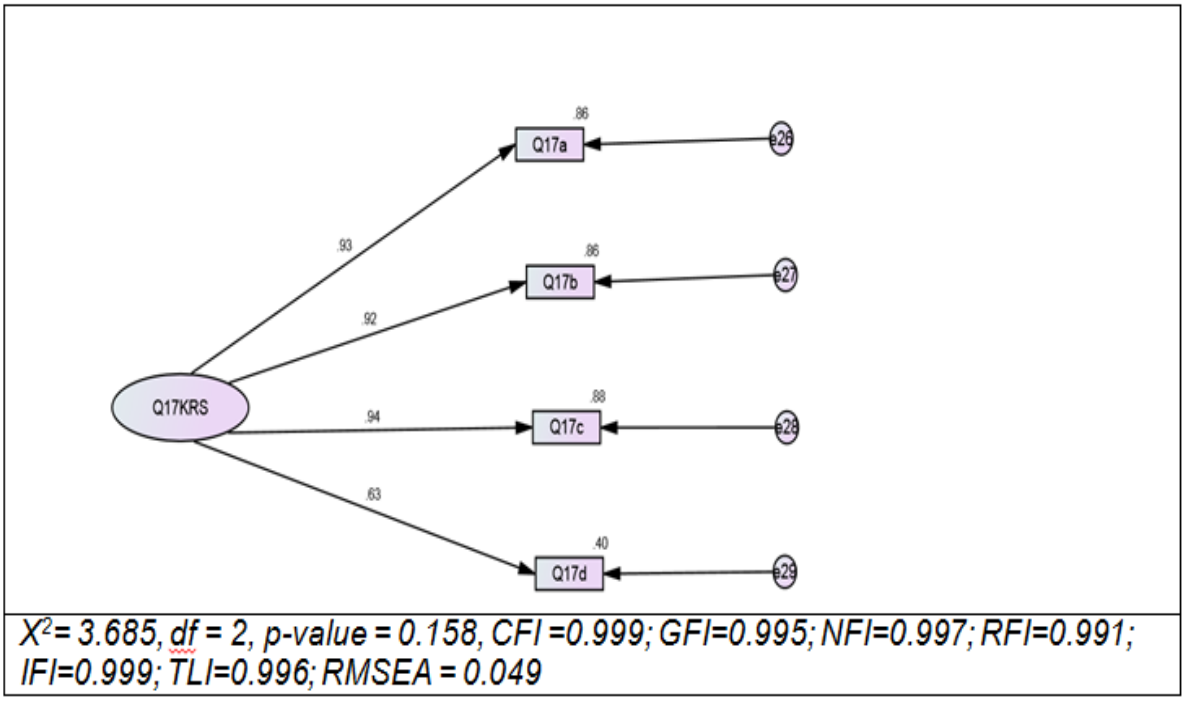



Figure 34: CFA output model for Knowledge share/transfer

Thus, the χ2 goodness-of-fit test showed that there was no significant difference between the observed covariance matrix matched and the estimated covariance matrix within the sample.

The value of CFI was .999, while GFI was .995 and RMSEA (badness-of-fit) was .049. The results indicated that the measurement model provided a reasonably good fit.

### 4.11.8. CFA output model for Knowledge retention/storage

There were four variables measuring the construct (Figure 35). One of the variables had a factor loading of .49 close to .5 thus it was retained.

The Chi-square value was .753 with 1 degree of freedom and a p-value of .385. Since .385 was more than .05 the χ2 goodness-of-fit test showed that there was no significant difference between the observed covariance matrix matched and the estimated covariance matrix within the sample. The indices satisfied that the measurement model was a good fit as evidenced by CFI = 1.000, CFI = .999 and RMSEA =.000.

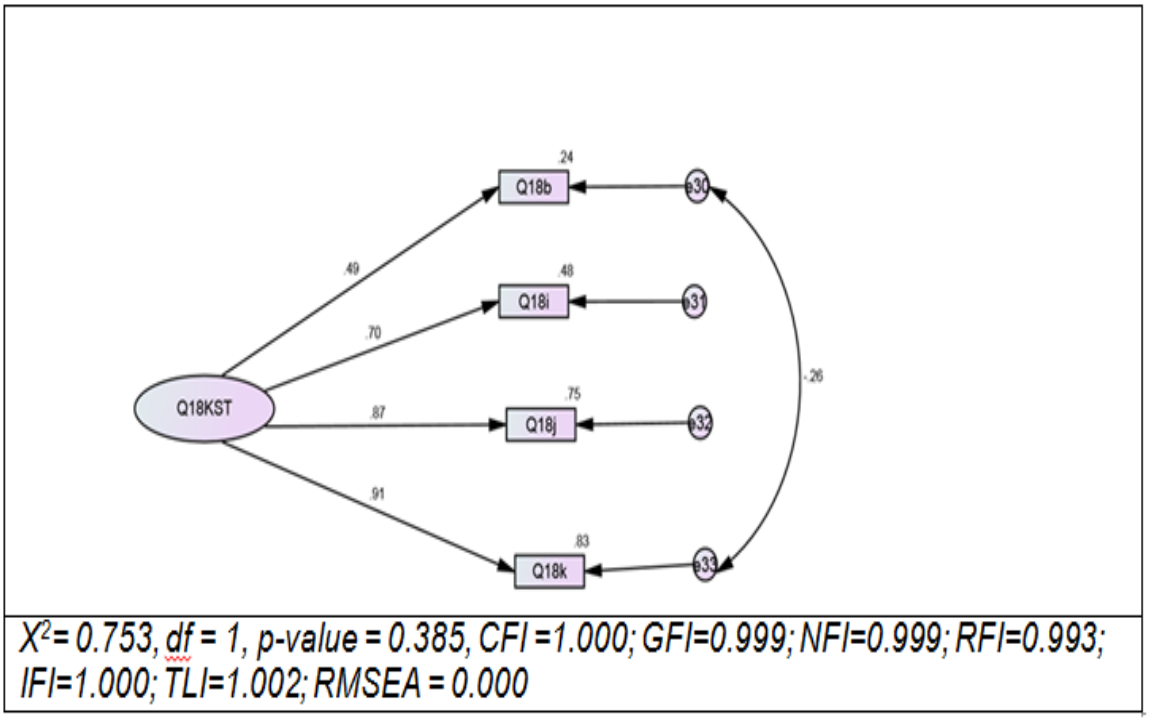



Figure 35: CFA output model for Knowledge retention/storage

### 4.11.9. CFA output model for Knowledge transfer activities

The factor loadings ranged from .78 to .82, thus they were above .05 as shown in Figure 36. The results of CFA showed that the model fit indices satisfy the conditions of a good fit. The Chi-square value was 1.833 with 2 degrees of freedom and a p-value of .400 which is above .05, thus insignificant. Thus, the χ2 goodness-of-fit test showed that there was no significant difference between the observed covariance matrix

matched and the estimated covariance matrix within the sample. The value of CFI was 1.00, while GFI was .997 and RMSEA (badness-of-fit) was .000. The results indicated that the measurement model provided a reasonably good fit.

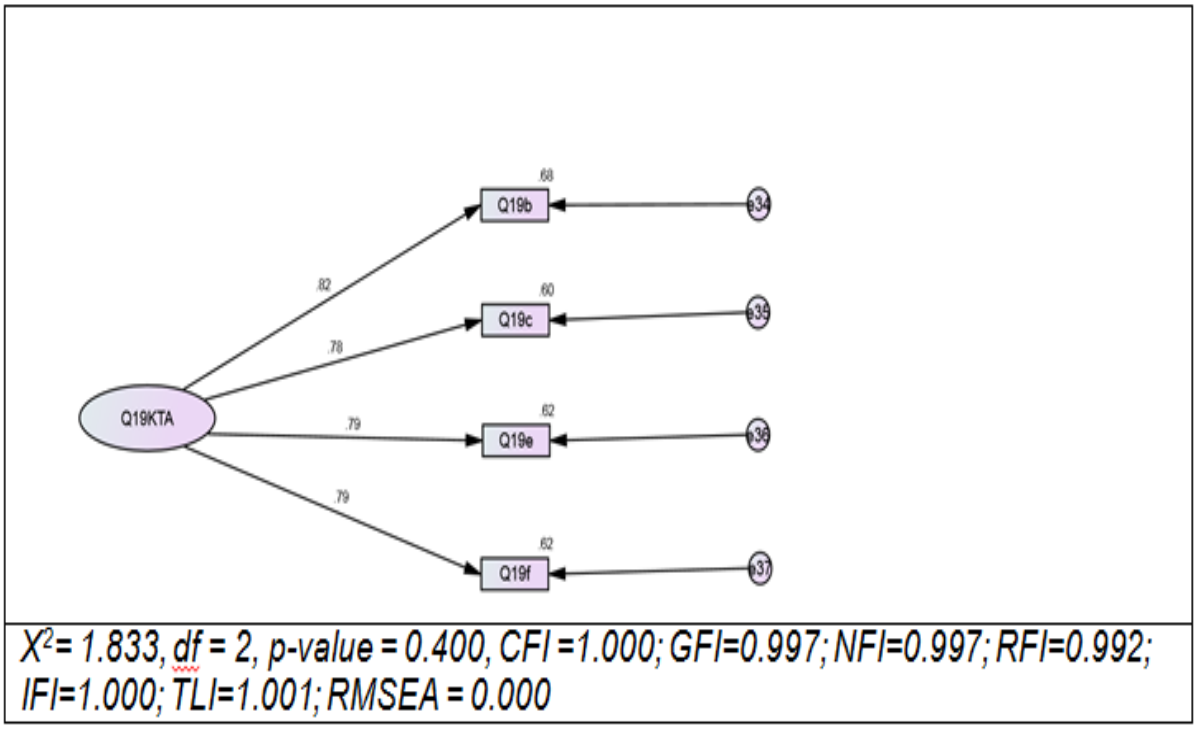



Figure 36: CFA output model for Knowledge transfer activities

### 4.11.10. CFA output model for Knowledge application/use

In terms of the aspect knowledge application/use all factor loadings ranged from .65 to .78 as shown in Figure 39.

The Chi-square was insignificant with a value of 5.274 and a p-value of .383 which is above .5. The other goodness-of-fit index was that the value for CFI, an IFI, was 1.00, while the values for absolute fit indices were .994 for GFI (goodness-of-fit) and .013 for RMSEA (badness-of-fit). These results suggest that the measurement model knowledge application/use provided a reasonably good fit.

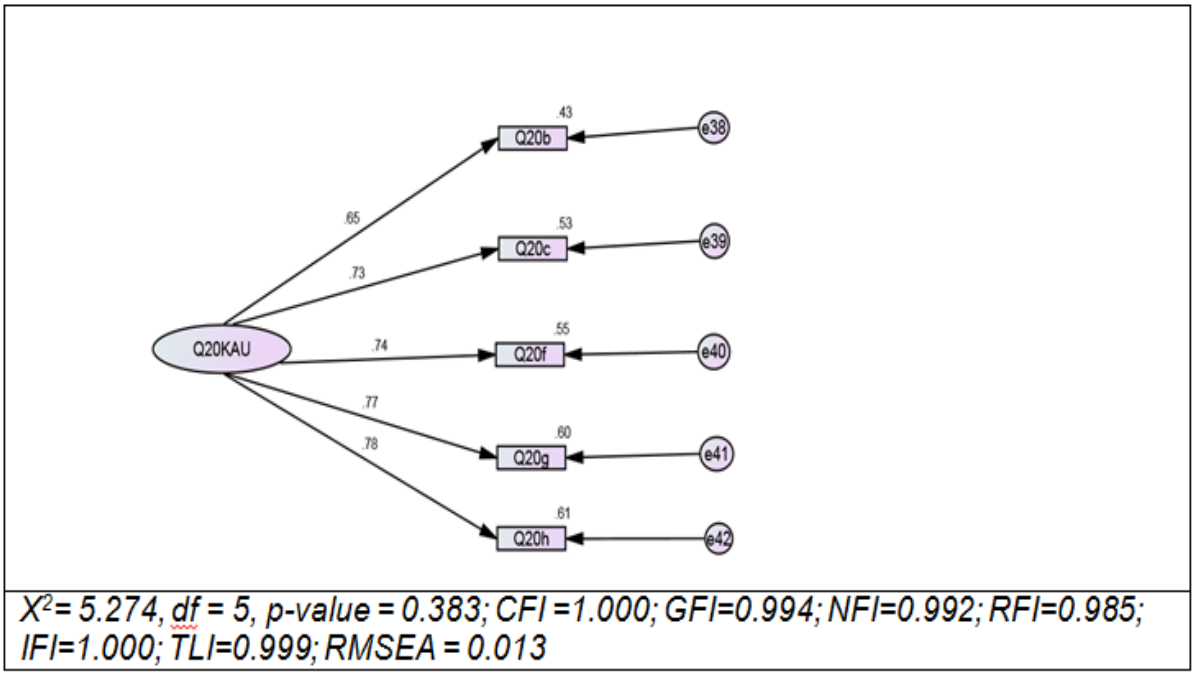



Figure 37: CFA output model for Knowledge application/use

### 4.11.11. CFA output model for OP

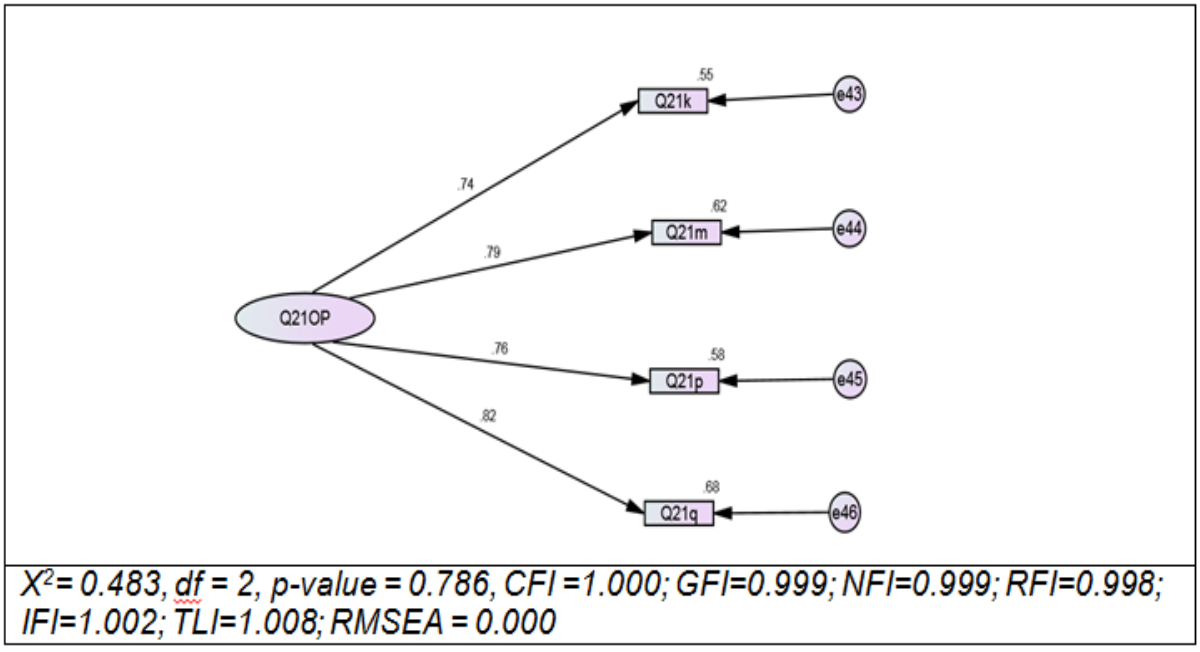



Figure 38: CFA output model for OP

All factor loadings ranged from .74 to .82 and thus they were above .5 (Figure 38). The Chi-square value of the OP was .483 with 2 degrees of freedom. The associated p-

value was .786 which was insignificant. This implied that the observed covariance matrix matched the estimated covariance matrix with sampling variances.

The other goodness-of-fit index was that the value for CFI, an IFI, was 1.00, while the values for absolute fit indices were .999 for GFI (goodness-of-fit) and .000 for RMSEA (badness-of-fit). These results suggest that the measurement model organisation performance provided a reasonably good fit.

### 4.11.12. CFA output model for healthcare delivery

There were four variables measuring the construct (Figure 39) but one of them had a factor loading of .47, which was slightly below. The Chi-square value was 1.712 with 1 degree of freedom and a p-value of .191. This indicates that there is no statistical significant difference between the two covariance matrices, that is the observed sample and the estimated covariance matrix.

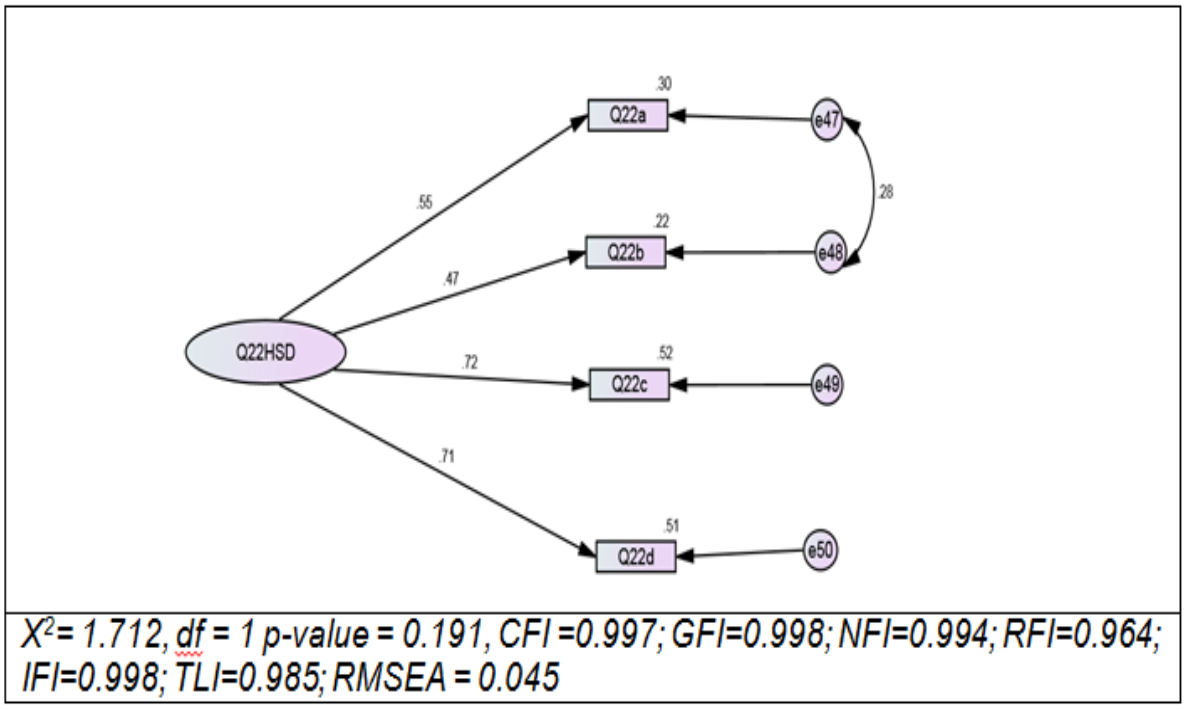



Figure 39: CFA output model for Healthcare delivery

In addition, for CFI the IFI was .998, while the values for absolute fit indices were .998 for GFI (goodness-of-fit) and .045 for RMSEA (badness-of-fit). The results suggest that the overall measurement model provides a good fit of the data.

### 4.11.13. CFA output model for organisational culture

In terms of the dimension OC, the iteration limit was reached and thus a solution could not be reached.

### 4.11.14. CFA output model for organisational structure

The dimension was measured by four variables (Figure 40). One of them had a factor loading of .41. The Chi-square gave a value of 5.928 with 2 degrees of freedom and a p-value of .052. Thus, the χ2 goodness-of-fit statistic indicated that the observed covariance matrix matched the estimated covariance matrix within sampling variance.

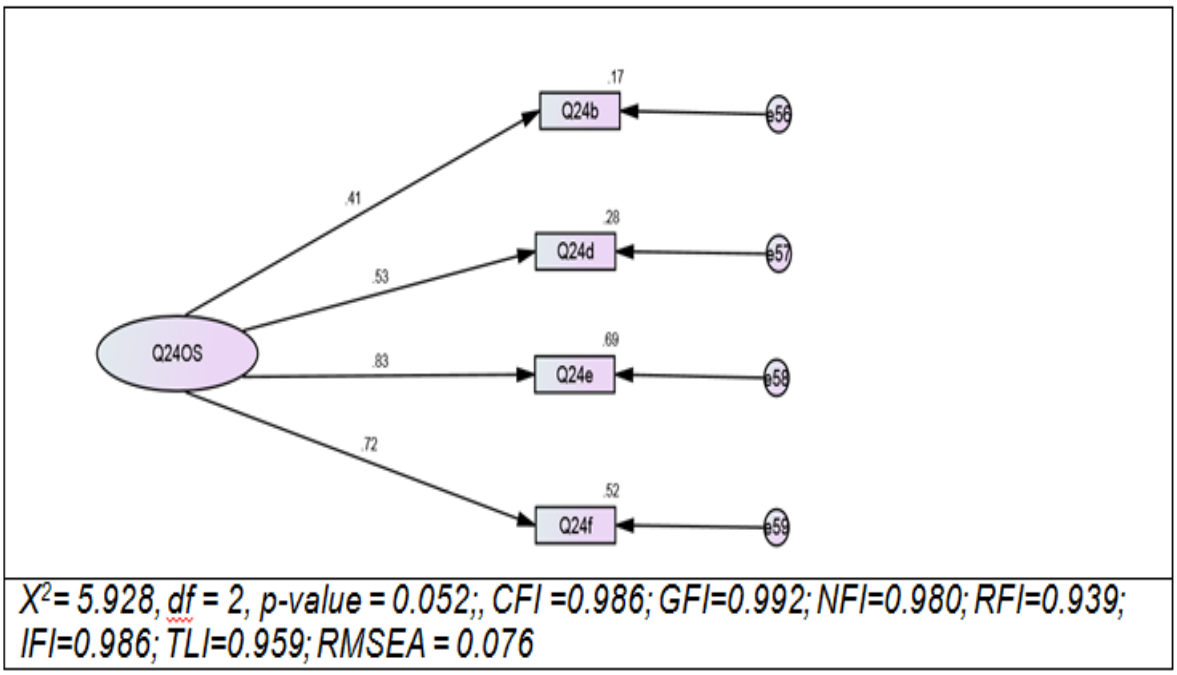



Figure 40: CFA output model for OS

The other goodness-of-fit index were that the value for CFI, an IFI, was .986 while the values for absolute fit indices were .992 for GFI (goodness-of-fit) and .076 for RMSEA

(badness-of-fit). These results suggest that the measurement model of organisation structure provided a reasonably good fit.

### 4.11.15. CFA output model for Information technology

The dimension was measured by four variables (Figure 41). The factor loadings ranged from .49 to .7. The results of CFA showed that the model fit indices satisfy the conditions of a good fit. The Chi-square value was .188 with 2 degrees of freedom and an insignificant p-value of .910. This indicates that there is no statistical significant difference between the two covariance matrices, that is the observed sample and the estimated covariance matrix.

In addition, for CFI, an IFI was 1.00, while the values for absolute fit indices were 1.00 for GFI (goodness-of-fit) and .000 for RMSEA (badness-of-fit). These results suggest that the overall measurement model provides a good fit of the data.

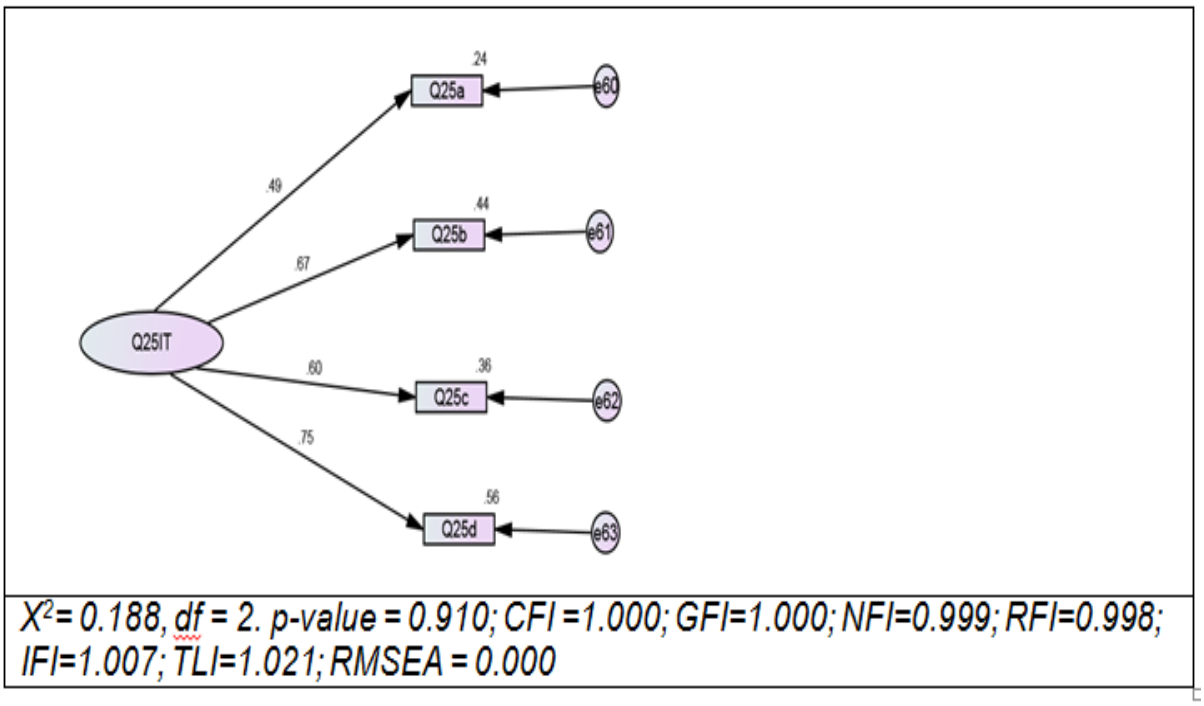



Figure 41: CFA output model for Information technology

The results of the estimated model are shown in the following section.

### 4.11.16. The summary statistics of the SEM estimated model

The factors confirmed in the confirmatory factor analysis were used to determine the structural equation modelling. As mentioned earlier, structural equation modelling has two parts, the measurement model developed based on theory (validated using exploratory factor analysis) and then tested with confirmatory analysis and the structural models. Thus, SEM provides a better way of empirically examining a theoretical model by involving both the measurement model and the structural model in one analysis (Hair, *et al.,* 2014).

In order to determine model fitness, the following indices are examined: Chi-squared X2, degrees of freedom (df), Chi-squared/degrees of freedom (X2/df), the Goodness-of-fit index (GFI), the average goodness-of-fit index (AGFI), the root mean square error of approximation (REMSEA), the comparative fit index (CFI), the Tucker Lewis index (TLI) as well as the parsimonious normed-fit index (PNFI) and the parsimony goodness-of-fit index (PGFI). According to Hair *et al.* (2014), the model and the data are good fitted if (X2/df) ≤ 3, GFI ≥ 0.90, AGFI ≥ 0.09, RMSEA ≤ 0.80, CFI ≥ 0.90, TLI > 0.90, PNFI ≥ 0.5 and PGFI ≥ 0.5. The summary of the goodness-of-fit statistics is presented in Table 88, Table 89 and Table 90 (page 309 to page 310). Most items of means of absolute fit meet the standard.

In determining model fitness ideally there should be:

- Non-significant X2 goodness-of-fit test
- CFI > 0.95
- RMSEA < 0.08 (Lower RMSEA values indicate better fit)

If the model fits the data, then paths analysis will be done. Path analysis is the general term for an approach that employs simple bivariate correlations to estimate relationships in an SEM model and it seeks to determine the strength of the paths shown in the path diagrams (Hair *et al.,* 2014). Since the model that fits the data was obtained, the results of the model and presentation of the path analysis are presented in the following sections.

In this case, the following statistics were obtained:

#### 4.11.16.1. CMIN

The default model had a Chi-square had a value of 68.171 with degrees of freedom of 42 with a p-value of .006. Thus, it was an over-identified model since the degrees of freedom are more than one.

Thus, in this case, the model does not fit the data well when looking at the Chi-square statistic. However, according to Hair *et al.* (2014), the χ2 is a mathematical function of the sample size such that as the sample sizes increases so does the χ2 value, even if the differences between matrices are identical. Hair *et al.* (2014) went on to say that χ2 is likely to be greater when the number of observed values increases.

Thus, they went on further to indicate that the Chi-square should not be used alone as a sole measure of the goodness-of-fit test since it is less meaningful when sample sizes become large which is the case in this scenario. Hair *et al.* (2014) recommend that if at least five of the statistics satisfy the conditions of goodness-of-fit, then the model will be a good fit (Table 86).

Table 86: Model Chi-square results

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|
| Default model | 24 | 68.171 | 42 | .006 | 1.623 |
| Saturated model | 66 | 0.000 | 0 | | |
| Independence model | 11 | 829.050 | 55 | .000 | 15.074 |

### 4.11.17. RMR, GFI

Hair *et al.* (2014) showed that model discrepancy could be adjudged using conventional null-hypothesis goodness-of-fit significance χ2 test. They also noted that this test, like all statistical tests, would become increasingly sensitive to tiny model fit discrepancies as the sample size increase. Using the GFI, the value is .966 which is above the cut of value of .95, the GFI shows a good fit (Table 87).

Table 87: GFI model results

| Model | RMR | GFI | AGFI | PGFI |
|---|---|---|---|---|
| Default model | .092 | .966 | .946 | .614 |
| Saturated model | .000 | 1.000 | | |
| Independence model | .224 | .667 | .601 | .556 |

### 4.11.18. RMSEA

Table 88: RMSEA model results

| Model | RMSEA | LO 90 | HI 90 | PCCLOSE |
|---|---|---|---|---|
| Default model | .043 | .023 | .060 | .734 |
| Independence model | .202 | .190 | .215 | .000 |

The RMSEA is a “badness-of-fit” index in that a value of 0 indicates the best fit and higher values indicate worse fit. In this case RMSEA for the default model is .043 signifying a good fit (Table 88).

Table 89: CFI model results

| Model | NFI | RFI | IFI | TLI | CFI |
|---|---|---|---|---|---|
| Default model | 0.918 | 0.892 | 0.967 | 0.956 | 0.966 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

The CFI had a value of .966 as shown in Table 89, thus it was considered good. The value of .966 is well above the cut of point of .9 signifying a good model fit. Now since the model fits the data, ideally, we then look at paths.

Table 90 gives the multiple regression weights from the model in AMOS.

Looking at Table 90, the critical ratios (CRs) for all variables range from 3.643 to 11.2907. Thus, they are greater than 2 indicating that the estimate is statistically significantly different from zero. Thus, looking at the results, all the paths are significant. For a path to be significant, the p-value should be less than .05, so that you reject the hypothesis that is H0: β=0. The standardised estimates are shown in Table 91

Table 90: The Multiple regression weights from the model

| Hypothesis | | Estimate | S.E | CR | P | Label |
|---|---|---|---|---|---|---|
| | *Q21OP←Q25IT* | .177 | .049 | 3.643 | *** | |
| | Q21OP←Q24OS | 1.000 | | | | |
| | Q21OP←Q21OP | 1.000 | | | | |
| | *Q25d←Q25IT* | 1.000 | | | | |
| | *Q25c← Q25IT* | .938 | .116 | 8.059 | *** | |
| | *Q25b← Q25IT* | .958 | .117 | 8.192 | *** | |
| | *Q24e←Q24OS* | 1.000 | | | | |
| | *Q24d←Q24OS* | .603 | .069 | 8.729 | *** | |
| | *Q21p←Q21OP* | 1.379 | .170 | 8.097 | *** | |
| | *Q21q←Q21OP* | 1.000 | | | | |
| | *Q22a←Q21OP* | 1.000 | | | | |
| | *Q22b← Q22HSD* | .722 | .076 | 9.453 | *** | |
| | *Q22c← Q22HSD* | 1.108 | .097 | 11.475 | *** | |
| | *Q22d← Q22HSD* | 1.030 | .091 | 11.290 | *** | |
| ***** means the p-value is less than 0.001** | | | | | | |

**Hypothesis 1**: Knowledge infrastructure capability (Information technology) significantly impacts on organisation performance

Table 91 shows that the p-value <.01 with β=.177. Since p-value <.010, we reject the null hypothesis of no association at the 5% level of significance. IT significantly impacts on organisation performance. For every increase of one unit in IT component, organisation performance concepts increase by .177.

**Hypothesis 2**: Knowledge infrastructure capability (Organisation structure) significantly impacts on organisation performance

Looking at the results in Table 91, organisation structure has a positive relationship with organisation performance. The regression coefficient was set to 1. The standardised estimated parameter was 1.445.

**Hypothesis 3**: Organisation performance significantly impacts on healthcare delivery Table 91 shows that organisation performance has a positive relationship with healthcare delivery. The regression coefficient was set to 1. The standardised estimated parameter was .949.

Table 91: Standardised estimates

| Hypothesis | Structural relationship | Standardised Estimate parameter |
|---|---|---|
| | *Q21OP←Q25IT* | .192 |
| | Q21OP←Q24OS | 1.445 |
| | Q22HSD←Q21OP | .949 |
| | *Q25d←Q25IT* | .728 |
| | *Q25c← Q25IT* | .610 |
| | *Q25b← Q25IT* | .682 |
| | *Q24e←Q24OS* | .869 |
| | *Q24d←Q24OS* | .546 |
| | *Q21p←Q21OP* | .964 |
| | *Q21q←Q21OP* | .627 |
| | *Q22a←Q21OP* | .662 |
| | *Q22b← Q22HSD* | .526 |
| | *Q22c← Q22HSD* | .745 |
| | *Q22d← Q22HSD* | .721 |

The final model fitted is given in Figure 42 (page 312). Figure 42 shows the maximum likelihood estimates for the model. After all the constructs in the measurement model were validated and achieved satisfactory fit, the structural model was presented for the analysis. The structural model intends to specify which latent constructs directly or indirectly influence the values of other latent constructs in the model (Hair *et al.,* 2014).

Therefore, the main principle of the structural model is to test the specific hypotheses with the intention to answer the research questions highlighted in Chapter One. In order to evaluate the structural model, goodness-of-fit indices (Table 85 on page 292) were inspected to assess if the hypothesised structural model fits the data (Hair *et al.,* 2010; Hair *et al.,* 2014).

In the structural equation modelling the hypothesised relationships were presented in the form of a path diagram (Figure 42). In Figure 42, the estimated structural equation model diagram for this study consists of nine main constructs; Information communication and technology, OS, OC, Knowledge creation/acquisition, Knowledge sharing/transfer, Knowledge retention/storage, Knowledge application/use, OP and HSD, with the arrows representing relationships between the variables.

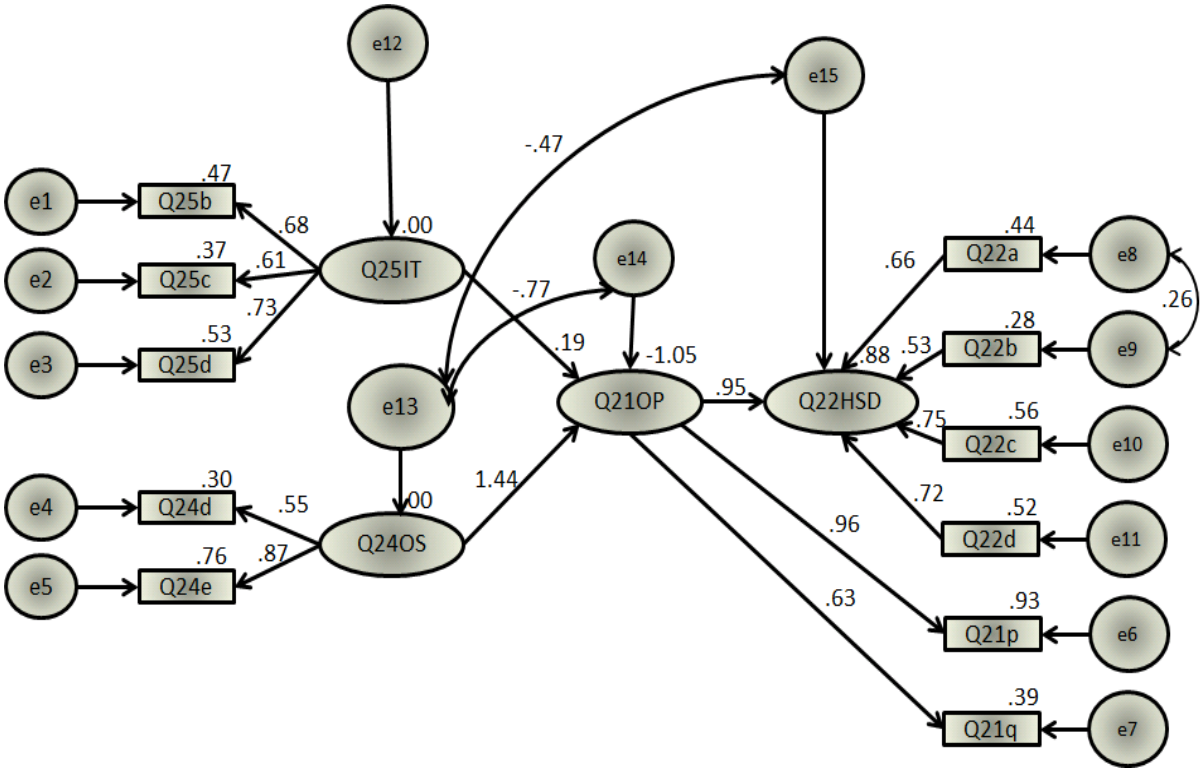



Figure 42: The estimated structural equation model – KM concepts

The single-headed arrows in the diagram represent linear dependencies indicating the extent to which one variable (construct) is dependent on another. For example, the arrow connecting information technology with OP represents a direct relationship that

is hypothesised between these two variables. Correlations or covariance between the variables are represented as double-headed arrows, as indicated in the relationship between HSD and information technology. No causal path is hypothesised for the double-headed arrows but a relationship between the variables.

The estimated structural equation model in Figure 42 shows that all paths have CRs greater than 1.96, thus the regression weights are all significant. It can also be observed that all factor loadings and path coefficients are significant, $p < 0.005$. One can conclude that the overall model fit appears to be a good fit as supported by the $\chi 2$ test which was 68.171 (df = 42) with a p-value = 0.001. Thus, since the p-value was greater than 0.05, the null hypothesis of good fit was not rejected. The path diagram of the hypothesised full estimated structural equation model produced the indices within the acceptable recommended value. The CFI = 0.960, CMIN/DF = 1.623 and RMSEA = 0.043 also suggest that the model fits the data well. Therefore, it can be concluded that the fit of the proposed model is reasonably good.

### 4.12. Summary of quantitative data analysis

The main objective of this chapter was to present the quantitative data analysis in this study, which consisted of the descriptive statistics, EFA, CFA and SEM.

The descriptive statistics showed that the majority of the survey respondents were Black (72.4%), were permanent employees (94.4%) and were employed at the provincial department (65.9%). The number of females was slightly higher (58.5%). Most of the employees were between the ages of 30 and 39 (52.7%). The majority of the respondents (69.9%) were matric holders or equivalent. The survey respondents did not have much experience as most of them (72.4%) had worked for less than two years in their current position. The descriptive statistics of the KM capability scale indicated that the extent of each item of KM capability measurement, OP and HSD was perceived by the survey respondents to be moderate to high. Only HSD and OS were perceived by survey respondents to be low.

Finally, the data analysis also employed EFA. It showed that observed variables were loaded into factors representing the KM capability dimensions: Knowledge

infrastructure capability (Information technology, OS and OC), Knowledge process capability (KM-A), OP and HSD. This means that the KM capability dimensions derived by the EFA in this study are consistent with those reported in the KM literature. The structural equation modelling showed that IT significantly impacts on organisation performance, organisation structure has a positive relationship with organisation performance and organisation performance has a positive relationship with HSD.

The next chapter will present the qualitative content analysis using data from the interviews and organisational documents. The findings from the qualitative data analysis will describe how KM capability dimensions could be implemented within the GDH in this study.

# CHAPTER FIVE: QUALITATIVE DATA ANALYSIS

> As every bookie knows instinctively, a number such as reliability – a qualitative rather than a quantitative measure – is needed to make the valuation of information practically useful.
>
> Hans Christian von Baeyer

## 5.1. Introduction

This study employed the mixed-methods design in which data was collected using both quantitative and qualitative techniques. The results of the quantitative data analysis were reported in Chapter Four. The EFA results showed that the items of the KM capability scale used in the questionnaire survey were loaded into seven KM dimensions, as suggested by the literature. In estimating the relationship between each KM capability dimension, OP and HSD, the results of the SEM showed that knowledge process capability and knowledge infrastructure capability were positively and significantly related to OP.

To gain more in-depth understanding of the context of KM at the GDH, face-to-face interviews were conducted and departmental documents, acts of parliament, journals and websites were examined. In this qualitative research, the study focused on the content and contextual meaning of the text with the objective to provide knowledge and understanding of the phenomenon under study. The text data was mainly verbal but was captured electronically and included documents from the GDH archive. Therefore, in this section the analysis of qualitative data is a process involving the subjective interpretation of the content of text data through the systematic classification process of identifying themes or patterns (Elo, Kaariainen, Kanste, Polkki, Utriainen & Kyngas, 2014; Gastaldo, Magalhães, Carrasco, Davy, Ravitch, Riggan, Jobling & Lau, 2014).

This chapter presents the analysis of the extracted qualitative data. The qualitative data obtained from interviews was analysed using a combination of mixed-methods

data analysis and thematic analysis approaches. The mixed-methods data analysis and thematic analysis approaches employed were based on the approach of Gastaldo *et al.* (2014), Graff (2014) and also Barratt, Choi & Li (2011). This approach provided a comprehensive roadmap to qualitative data analysis using data displays in the form of networks and graphs, with the emphasis on internal validity. This internal validity was established through pattern-matching, explanation building and addressing rival explanations (Yin, 2014). It reflects the findings of data from interviews and organisational documents, reviews carried out to investigate the improvement of OP and HSD through KM in the GDH.

This chapter is organised as follows: It began with an introduction in section 5.1, followed by section 5.2 which discusses the challenges that were encountered during the data collection stage. Section 5.3 presents the nature of the interview process. Section 5.4 presents the characteristics of interview participants. Section 5.5 presents the thematic analysis process. Section 5.6 discusses the KM capability dimensioning. Section 5.7 discusses the organisational documents analysis. Section 5.8 discusses the implementation of each KM capability dimension and OP and HSD as perceived by the participants in this study in the form of a conceptual KM capability model. Section 5.9 discusses the data comparison and integration from both the quantitative and qualitative analysis and Section 5.10 is a summary of the chapter.

## 5.2. Challenges experienced during the data gathering process

The first challenge pertains to the issue of concealing true feelings by opting to remain neutral so as to avoid management backlash. The second challenge was the issue of anonymity of the interviewees.

The researcher argues that by carefully considering the audience for one's research and by re-envisioning the informed consent process, qualitative researchers can avoid confidentiality dilemmas that might otherwise lead them not to report rich, detailed data. Although the interviewees were senior and executive managers, and the interviews were conducted in the interviewee's offices, the interview arrangements were personally managed with the researcher with no involvement of personal

assistants or secretaries and they all requested that the audio recordings of the interview be used only for writing transcripts and must be discarded when done.

Despite the research challenges provided above, the researcher believes that the data provided does represent a true reflection of the situation. This assurance is based on the two conditions: first, the researcher is adequately familiar with the nature of government departments and on the other hand, has worked extensively with them as an ICT business development manager.

### 5.3. Interviews

Thirty-five semi-structured interviews with 18 open-ended questions reflected the descriptive component (Appendix G). The administration of 500 questionnaires involving employees across the GDH and related regional healthcare entities reflected the statistical element.

Extracting compelling conclusions from the semi-structured interviews can be considered as the most difficult and least codified part of the process (Yin, 2014). The main focus of the researcher was on the themes, or subjects and patterns, emphasising, pinpointing examining and recording patterns within the data. A qualitative interview, or semi-structured interview, described as such because of its many open-ended questions, was used in this study and was based on the research question. The choice of the semi-structured interview was informed, not only by the lack of focus on KM in the public-sector in general (Acheampong, 2014) but also by the following factors:

- The researcher needed to ask probing, open-ended questions in a particularly conservative and political environment and wanted to ascertain the independent thoughts of each of the interview participants;
- The researcher needed to ask probing, open-ended questions in a particularly bureaucratic and protocol-driven environment on topics that the interview participants might not be candid about if they were sitting amongst peers;

- The researcher needed to conduct a formative program of KM evaluation and wanted to conduct one-on-one interviews with senior managers and executive managers tasked with driving KM;

- The researcher was in uncharted territory where he suspected that there could be unknown but momentous politically driven issues to examine.

The senior and executive managers at the GDH were identified as the target group for conducting interviews and only 35 of these interview participants were randomly selected out of sample population of 8 executive managers, 27 senior managers, 20 healthcare professionals and 47 middle managers. All identified interview participants were contacted telephonically and appointments were arranged directly with them before the actual interviews. All interviews were conducted conversationally with one interview participant at a time, using a blend of closed and open-ended questions, often accompanied by follow-up “why” or “how” questions. The researcher explained the aim of the interview to all the interview participants before the actual interviews, citing the project’s endorsement by the PPRC of the GDH.

All the interviews took place in the interview participants’ offices. At the request of the researcher mainly for producing the interview transcripts, all the interviews were audio-taped but responses were recorded manually. The names, positions or other personal details of interview participants were not recorded in order to align with the principles of informed consent for a research project (see Appendix L). In addition, nobody was quoted or identified specifically with reference to any responses. The researcher used only the ideas, views and opinions that the participants expressed. The interview participants were given a copy of the interview questions prior to or at the interview. Participants were also mailed a copy of their completed transcripts for alteration purposes. Fifty percent were returned without corrections while the other fifty percent had some factual corrections, amendments and additions.

The data analysis itself included sorting the data in many contrasting techniques to expose and create new insights and identify conflicting data. The qualitative content approach enabled synthesising and analysis and highlighted preliminary findings,

themes and lessons. Utmost care was taken to assess all available data to identify any evidence that might not have supported the initial findings.

This was done to avoid premature or inaccurate conclusions because there is no one best way to collect data (Creswell, 2014). Creswell (2014) posited that there are four important considerations, that apply to all data collection and will help ensure the overall integrity of both the process and the information collected. Utmost care was taken to assess all available data in four ways:

- Appropriate methods: Although the need for appropriate methods may seem obvious, methods can be compromised by bias, choosing one method or set of experimental conditions so that a particular conclusion can be drawn. Responsible research is research conducted using appropriate, reliable methods and adequate controls.

- Attention to detail: The research protocol was correctly constituted and the results accurately recorded, interpreted and published.

- Authorisation: Documents from the GDH archives and DoH library required permission and access to GDH email addresses required appropriate authorisation. Researchers have a responsibility to know when permission is needed to collect or use specific data in their research.

- Recording: The final step in data collection is the physical process of recording the data in some type of audio recordings, transcript, electronic copy, or other permanent “record” of the work done. Whatever format is used for recording data, it is important to keep in mind the purpose of any record is to document what was actually done and the results that were achieved.

### 5.4. Characteristics of interview participants

Table 92: Interview participants

| Age in years | Current position | Number of years working in the department | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | Less than a year | 1 - 2 years | 3 - 5 years | 6 - 10 years | 11 - 15 years | |
| 30 - 34 years | Senior Manager | 0 | 1 | 1 | 0 | 0 | 2 |
| 35 - 39 years | Senior Manager | 0 | 2 | 3 | 1 | 0 | 6 |
| 04 - 44 years | Senior Manager | 6 | 2 | 3 | 0 | 0 | 11 |
| 45 - 49 years | Executive Manager | 0 | 0 | 0 | 4 | 0 | 4 |
| | Senior Manager | 0 | 0 | 2 | 0 | 0 | 2 |
| 50 years and above | Executive Manager | 0 | 0 | 4 | 0 | 0 | 4 |
| | Senior Manager | 6 | 0 | 0 | 0 | 0 | 6 |
| Total | Executive Manager | 0 | 0 | 4 | 4 | 0 | 8 |
| | Senior Manager | 12 | 5 | 9 | 1 | 0 | 27 |

All interview participants were members of the executive committee (EXCO) and senior management team of the GDH. All of them reported to the HoD or Executive managers. The HoD was the equivalent of a CEO in a private sector organisation and reported to the Member of the Executive Committee (MEC) of the Provincial Legislature. The MEC was equivalent to the chairman of the board in a private sector organisation and was a political foreperson for healthcare services in Gauteng. All interview participants were very senior in the departments and full-time employees, or public servants. Their ages and years of service in the GDH varied, as illustrated in Table 92.

The profile of the interview participants showed that they were very experienced; 18 (51%) of them had three or more years of service in the GDH at senior to executive levels and all 33 (95%) of them were over the mature age of 40 years. This experience was readily evident during the interviews. The interview participants were very co-operative and reflective. They were knowledgeable in their respective areas of responsibility and fully understood the ramifications of knowledge or information sharing or lack thereof. Each of the interviewees provided a thoughtful response to all questions posed. All articulated the importance of aspects of KM-A to the organisation and to themselves.

### 5.5. Mixed-methods thematic analysis process

The mixed-methods thematic analysis was chosen as an approach to analysing qualitative data that concentrates on the themes or subjects and patterns and the recording of these patterns within the data (Yin, 2014).

Interviews were conducted and important notes were transcribed and the transcripts analysed. Transcripts (Appendix N) were reread tentatively identifying and coding themes. This type of coding, referred to by Yin (2014) as “pattern coding”, was helpful in the next phase of the analysis. Pattern coding was employed to look more closely for those words, descriptions, stories, or examples offered by the interview participants that appeared to describe similar concepts. Coding of themes commenced during and immediately following the interview process. Themes were also identified during the transcription process. The criterion used in identifying dominant themes was their continued emergence during the data analysis process. Those themes were identified by counting the number of participant responses with similar views (for example, 15 interview participants identified ICT as being the biggest barrier - efficiently and effectively - to storing information that they receive. Throughout the analysis, the researcher identified a number of themes by considering the following three stages highlighted by Peters & Halcomb (2015):

- Descriptive coding
- Interpretative coding
- Defining overarching themes

The first step that the researcher followed was the open coding to better understand the subjects (Punch, 2015). Concepts were identified and then the data was reviewed again to establish which segments matched each category. The categories were then consolidated, becoming more theoretical and more abstract. Finally, dimensions underlying the theoretical categories were identified. Based on the categorisation and theme analysis techniques, the researcher perused each interview several times and coded each one separately on the basis of terms or phrases used by the participants (Peters & Halcomb, 2015).

Employing the language used by the participants whenever possible, similar codes were discerned and collated into categories. The process of coding interviews was

continued in this manner until the researcher could not ascertain any more distinct or shared patterns. Concurrently, all discerning linkages among the categories were then assembled into aggregate dimensions, which enabled development of a grounded conceptual framework that linked the various concepts that emerged from the data (Lecuona & Reitzig, 2014; Nag & Gioia, 2012). The main outcome of the analysis was a conceptual framework that explains phenomena and extends existing knowledge, within the limits of the critical bounding assumptions.

Data was coded according to common themes (see Figure 49, Figure 50, Figure 51 and Figure 54). Nag and Gioia (2012) argue that the aim of compiling thematic analysis is not merely a descriptive summary of the content of the theme but rather building a narrative that informs the reader how research findings have cast light upon the issue on hand.

The thirty-five interviews offered insightful descriptions of the main themes that determine the factors (knowledge infrastructure capability and knowledge process capability) that affect OP and HSD. After the interview transcripts had been coded, the process of pattern coding began. Codes generated during coding were reviewed to determine how they could be aggregated into categories. Henceforward, these issues were used to deduce key themes of KM capability that were common or recurring as discussed in detail in Section 5.6.

The discussion of salient points was based on the review of the literature on KM related to OP, HSD, public-sector reform and good governance, organisational transformation and a knowledge-based view; document reviews; interviews with executive managers and analysis of questionnaires returned by survey respondents from the GDH. In the data analysis phase, data was reviewed for internal validity and methodological soundness through coding, pattern-matching and explanation building.

A pattern was defined as any arrangement of objects or entities (Barratt *et al.,* 2011). All theories imply some pattern but theories and patterns are not identical (Yin, 2014). The conceptualisation task involved the translation of these ideas into a specifiable theoretical pattern, indicated by the top shape in Figure 43.

The bottom half of the figure indicates the realm of observation, which is broadly meant to include direct observation in the form of impressions, field notes and objective measures. The operationalisation task involves the determination of a relevant observational pattern and is indicated by the lower shape in Figure 43.

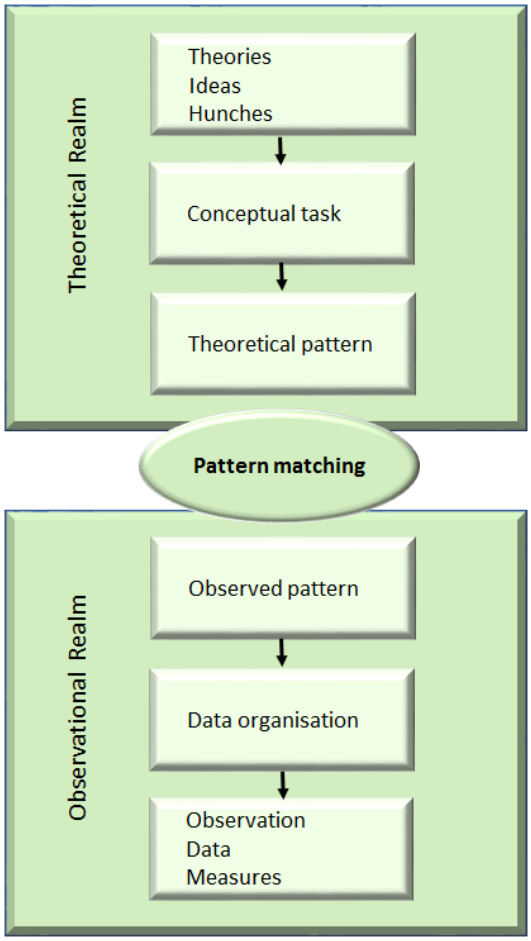



Figure 43: Pattern-matching for construct validity
Source: (Yin, 2014; Barratt *et al.,* 2011)

The inferential task involves the attempt to match these two patterns, as indicated by the centre of the figure. To the extent that the patterns match, one can conclude that the theory and any other theories that might predict the same observed pattern receives support. Specifically, pattern-matching implies that more complex patterns, if matched, yield greater validity for the theory (Yin, 2014; Barratt *et al.,* 2011).

In essence, in the current study the researcher was looking for patterns in the emerging data and then compared the patterns against the theoretically derived hypotheses.

Data analysis was carried out by pattern-matching and building an explanation of the case. Thus, the study's concerns were subsumed in mixed-methods data analysis. In addition, in terms of enhancing the internal validity of this study, it was important to show the following:

- That all relevant evidence was used
- That all rival explanations were used
- That the analysis addressed the most significant aspect of the case-study
- That the researcher's knowledge and experience were used to maximum advantage in the study

This was effectively a data-handling procedure for identifying essential features and relationships, categorising and interpreting data (Leedy & Ormrod, 2015) and reducing it to descriptive information. Therefore, there was some data convergence (triangulation) where items of information pointed to the same conclusion through logical arrangement of the details of the study (Creswell, 2014). The data convergence incorporated the five steps of the mixed analysis process Denzin (2012) by combining qualitative and quantitative results.

Following the triangulation design model of (Fetters *et al.,* 2013), data integration included both the qualitative and quantitative data that were collected. In order to identify the complex relationships in the study, these were compared, contrasted and used to confirm, cross-validate or corroborate findings within a single study. (Creswell, 2014; Graff, 2014; Creswell, 2012). There was also some categorisation of data (Leedy & Ormrod, 2015), examination of items of data for their relevance to the study (Graff, 2014), analysis of the data for underlying themes and patterns (Creswell, 2014) and synthesis of results and generalisations arising thereafter (Fetters *et al.,* 2013).

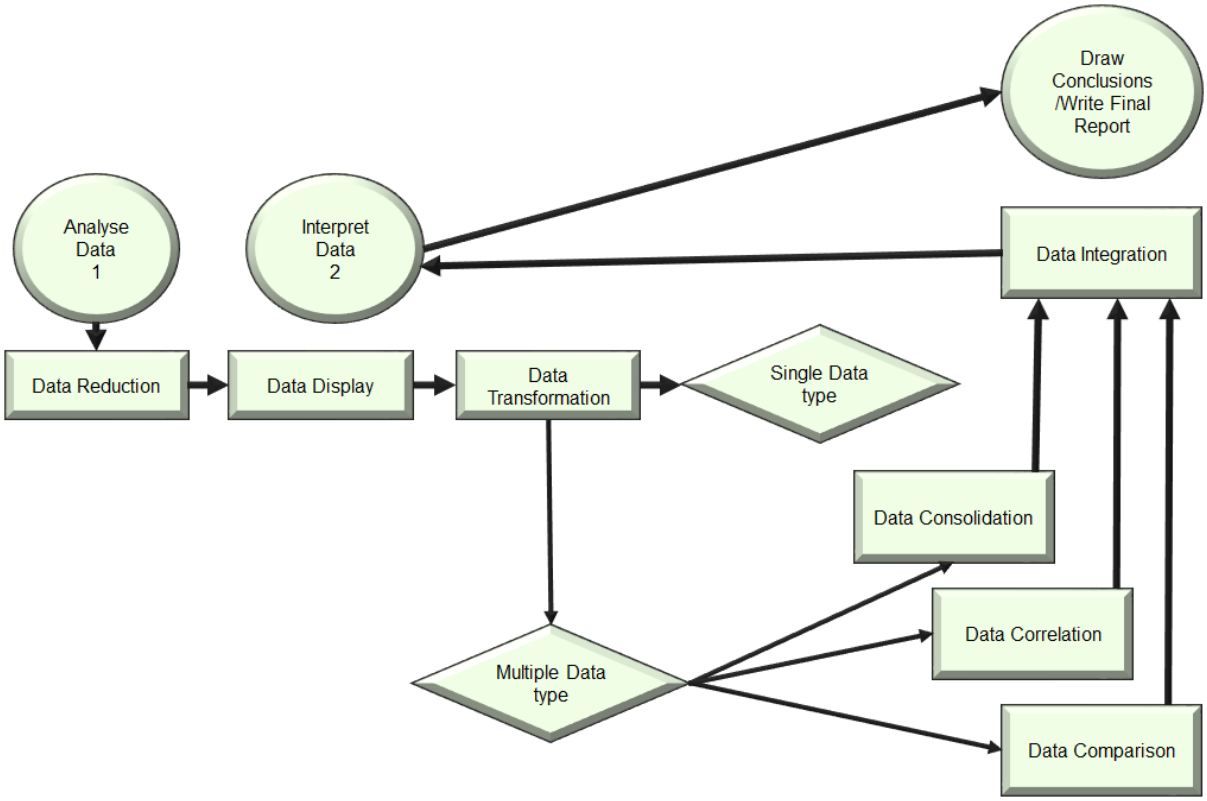



Figure 44: Steps in the mixed-methods data analysis process
Source: (Onwuegbuzie & Leech, 2006)

Therefore, in handling mixed-methods data analysis, as alluded to above and in Section 3.5, the researcher in the present study used five of Onwuegbuzie & Combs (2011) seven stages: data reduction, data display, data consolidation, data comparison and data integration (Figure 45). Specifically:

- Qualitative data was reduced to themes (i.e., data reduction)
- Qualitative and quantitative data were displayed in tables and figures (i.e., data display)
- Quantitative and qualitative data were combined to create blended data, new or consolidated variables or data sets (i.e. data consolidation) and
- Quantitative and qualitative findings from the data were compared and integrated (i.e. data consolidation and data integration)

In Figure 46 (page 330), the process starts with data reduction which involves reducing the dimensionality of the qualitative data (e.g., via exploratory thematic analysis,

memoing) and quantitative data (e.g., via descriptive statistics, exploratory factor analysis, cluster analysis). It is then followed by data displays which involve describing pictorially the qualitative data (e.g., matrices, charts, graphs, networks, lists, rubrics and Venn diagrams) and quantitative data (e.g., tables, graphs). This is followed (optionally) by the data transformation stage, at which point quantitative data is converted into narrative data that can be analysed qualitatively and/or qualitatively. Data are converted into numerical codes that can be represented statistically. In this manner, data correlation involves quantitative data being correlated with qualified data or qualitative data being correlated with quantified data. This is followed by data consolidation, wherein both quantitative and qualitative data are combined to create new or consolidated variables or data sets. The next stage, data comparison involves comparing data from the qualitative and quantitative data sources. Data integration is the final stage, through which both quantitative and qualitative data are integrated into either coherent whole or two separate sets (i.e., qualitative and quantitative) of coherent wholes.

Data results were presented following the data analysis process (Figure 44) in a simplified manner so that “the data must speak for themselves” (Leedy & Ormrod, 2015; 296). In other words, it is an organised, condensed assembly of information that permits conclusion drawing and/or action taking (Onwuegbuzie & Leech, 2006).

### 5.5.1. Data reduction

The data reduction phase in the analysis involved the abstraction and then transcription of the raw data from the interview transcripts (Appendix N) Onwuegbuzie & Combs (2011). It was the first of the phases of a mixed-methods data analysis that occurred continually throughout the analysis in order to trace the “lawful and stable relationships among social phenomena” (Punch 2015; 171). It happened through iterative editing, segmenting and summarising data through coding, memoing and associated activities such as finding themes and patterns.

It also happened through conceptualisation and explanation. The objective of data reduction is to reduce the data without significant loss of information or stripping

information from its context (Onwuegbuzie & Combs, 2011). According to Onwuegbuzie & Combs (2011), data reduction involves reducing the dimensionality of qualitative findings using quantitative analysis and/or quantitative findings using quantitative analysis.

As part of data reduction, the contents of transcripts were assimilated. Key issues were identified and subsequently coded; themes were then extracted from them. These extracted themes were then interpreted to give greater understanding of the main issues, which formed the basis for addressing and answering the research questions. The reduction process also incorporated comparison of field notes that contained the researcher's interpretation of events with interview transcripts (Appendix N), the interview schedule and organisational documents.

In undertaking the task of coding the data, this study used the content analysis approach to examine the categories that the data comprised and condensed the data into fewer categories, which were more accessible (Elo *et al.,* 2014). Data with similar meanings or connotations were grouped together, thus enabling the research study to create codes. Content analysis looks for the presence of words/phrases or concepts in a text and endeavours to understand their meanings and relationships to each other (Gastaldo *et al.,* 2014).

Content analysis enabled the researcher to discover patterns in the data that facilitated understanding of the role of KM in improving OP and HSD in the GDH. The researcher was particularly interested in patterns of data addressing the research questions. The use of content analysis was important because it led to the discovery of different dimensions and nuances of concepts (Elo *et al.,* 2014; Gastaldo *et al.,* 2014). This research study was able to uncover and report aspects of KM that would not have been accessible through the more casual or less rigorous use of language (Babbie, 2015). Conclusions were drawn from the themes and categories that were generated in the course of qualitative content analysis and in the initial coding stage.

The created codes, which are themselves labels used in assigning units of meaning to inferential or descriptive information compiled during a study were taken into cognisance.

### 5.5.2. Initial coding

In using this type of coding and so as not to destroy the meaning of the data through excessive coding, straightforward categories and labelling were employed (Yin, 2014). Moreover, some meaningful phrases were employed by assigning them as codes (Leedy & Ormrod, 2015). Because coding is an on-going process in research, the coding of interview data was not left to the end of the data collection. As soon as an interview was conducted, transcription was undertaken and coding followed almost immediately.

### 5.5.3. Pattern coding

The use of this coding method involved the grouping of summaries into smaller sets of themes and categories (Yin, 2014). Based on the issues that were being mentioned repeatedly by interview participants, the codes that were generated during the initial coding stage of analysis were re-visited. These were then grouped into categories. Using the issues derived from the initial coding to deduce key themes that were common and found to be recurring (Yin, 2014), keywords or phrases indicating the inferred themes or patterns were selected. As a result, this process assisted in identifying the themes related to each of the research questions. It likewise helped in reducing the mass of data into smaller analytical units.

### 5.5.4. Data display

This was the second step in the process of mixed-methods data analysis and was concerned with the way the previously coded data were packaged and displayed to prepare it for the eventual drawing of conclusions. According to Onwuegbuzie and Combs (2010), data display is organising, compressing and assembling information and visually presenting both qualitative and quantitative results within the same

display. A point further confirmed by Babbie (2015) was that data display is presenting data from multiple sources in one display, thereby enabling cross-method comparisons and analyses.'

In this study, data display involved describing pictorially the qualitative data (matrices, charts and lists) and quantitative data (tables, graphs). Because they enabled data to be organised and summarised, many techniques of displaying data were used at all the stages of data analysis Punch (2015) made the point that good qualitative analysis involves repeated and iterative displays of data. These tables and matrices were helpful in denominating the themes from the codes in the direction of the research findings.

### 5.5.5. Drawing and verifying conclusions

This stage of data analysis is concerned with drawing conclusions. We must be cognisant of the fact that the themes discussed in the course of the analysis performed the task of responding to the research questions, thus realising the objectives devised for this research. The reason for reducing and displaying data is therefore to assist in drawing conclusions (Fetters *et al.,* 2013). Because drawing conclusions and the display of data take place simultaneously possible conclusions may be noted early in the analysis. Conclusion drawing and verifying involved developing propositions (Akdere, 2011). Drawing conclusions from qualitative research is a matter of judgement (Akdere, 2011). Therefore, it was extremely important to give readers as much information as possible concerning the process utilised to reach conclusions.

The three stages of mixed-methods data analysis are interwoven and concurrent throughout the data analysis (Onwuegbuzie & Combs, 2011), whereas data reduction and data display rest mainly on the operations of coding and memoing (Punch, 2015). This is depicted in Figure 45.

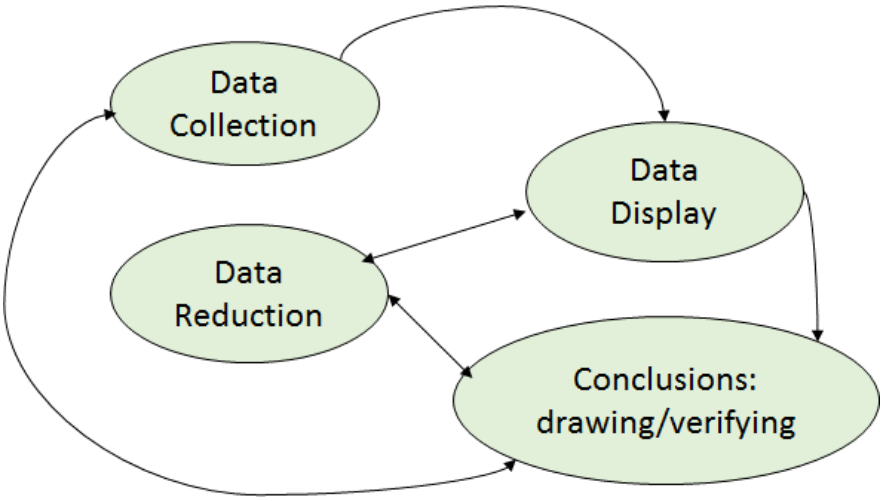



Figure 45: Components of data analysis

Source: Punch (2015: 172)

### 5.5.6. Data transformation

This stage of data analysis is concerned with the transformation of qualitative and quantitative data. The data transformation process, which included changing qualitative to quantitative data so that the data could be merged (Onwuegbuzie *et al.,* 2010) or transforming coded qualitative data into quantitative data (quantified) and converting quantitative data to qualitative data (qualifying, was excluded because of its inherent disadvantages, as observed by Fetters *et al.* (2013). These disadvantages were mainly that:

- A loss of depth and flexibility occurs when qualitative data is quantified
- Qualitative codes are multidimensional and do provide insights into a host of inter-related conceptual themes
- Codes can also be reconsidered during analysis in an iterative analytic process to allow for the recognition of emergent themes and insights
- Quantified data is fixed and one-dimensional; that is, they are composed of a single set of responses prospectively representing a conceptual category determined prior to data collection
- Quantified data cannot change in response to new insights in analysis and
- Reducing rich qualitative data to dichotomous variables renders them single-dimensional and immutable.

### 5.5.7. Data correlation

This stage of data analysis involves the quantitative data being correlated with the qualified data or the qualitative data being correlated with the quantified data (Onwuegbuzie & Leech, 2006). This is a case of making multiple measurements of one object at the same time (Leedy & Ormrod, 2015) and correlating them. In this case-study the single unit of analysis was the GDH and its related healthcare entities and hospitals and data that were collected quantitatively and qualitatively were analysed.

Although the findings revealed that there were differences in characteristics and variables that were indirectly related to differences in one or more other characteristics or variables, there was a somewhat predictable pattern where if one variable increased, another variable increased or decreased, which suggested the existence of correlation (Leedy & Ormrod, 2015). Nevertheless, this was not a correlational study, hence the researcher did not elaborate further on the findings regarding data correlation.

### 5.5.8. Data consolidation

This stage of data analysis is concerned with the combination of the qualitative and quantitative data. To facilitate the understanding of the characteristics of GDH OP and HSD, the researcher used the data consolidation analytic strategy. The data consolidation stage of the analysis of quantitative and qualitative data within a mixed-methods framework is a stage in which both quantitative and qualitative data are combined to create blended data, new or consolidated variables or data sets (Onwuegbuzie & Leech, 2006).

The quantitative and qualitative data in this study came from the questionnaire, organisational documents and interviews. Therefore, the researcher felt it was important to consolidate them if meaningful interpretations were to be made (Creswell, 2014), by comparing and contrasting the differences and similarities between

qualitative and quantitative data, as suggested by Creswell (2014). By consolidating various items of data, a holistic overview of the research findings enhanced the significance and interpretation of data. This consolidation approach was necessary because of the wide range of data needed to discover and develop suggestions for the use of KM in the improvement of the OP and HSD at the GDH.

In this study, rich qualitative comments suggested areas for further analysis. For example, recurrent comments were proffered about a centralised knowledge repository, KM policy, appropriate OC, access to knowledge, source of knowledge, collaborative working environment and knowledge transfer between colleagues at the GDH initiated a deeper analysis of the interplay of KM principles and OP and HSD.

To examine the extent to which the seven themes that emerged from the qualitative data were present in the survey data, the researcher reviewed the 97 and of them, 70 were identified as addressing constructs similar to the eight themes from the qualitative data analysis. The researcher continued to review the survey questions and their relation to the seven themes. In this manner, the researcher created a set of thematic variables in association with the joint use of both data types and quantified it by distributing the 70 items into seven themes.

On that account, the integration of different forms of data meant that the analysis consolidated the findings (Creswell, 2014) and enhanced the depth and clarity of the research findings. According to (Creswell, 2014), consolidation is a form of transformation because qualitative data and quantitative data have to be transformed into each other in mixed-methods data analysis. However, while consolidating data from multiple sources (qualitative and quantitative data), one had to be aware that triangulating multiple data sources often results in convergent, inconsistent and contradictory evidence that must be rendered sensible by the researcher (Yin, 2014).

### 5.5.9. Data convergence

Data convergence, or triangulation, serves to increase validity and complement findings (Onwuegbuzie & Combs, 2011), which was an important goal of this study.

One of the goals of this mixed-methods design study was to triangulate quantitative and qualitative data sources and results. This was also confirmed by (Williams & Shepherd, 2015), who stated that triangulation is desirable in mixed-methods research because it serves as validation and confirmation of the phenomena being studied.

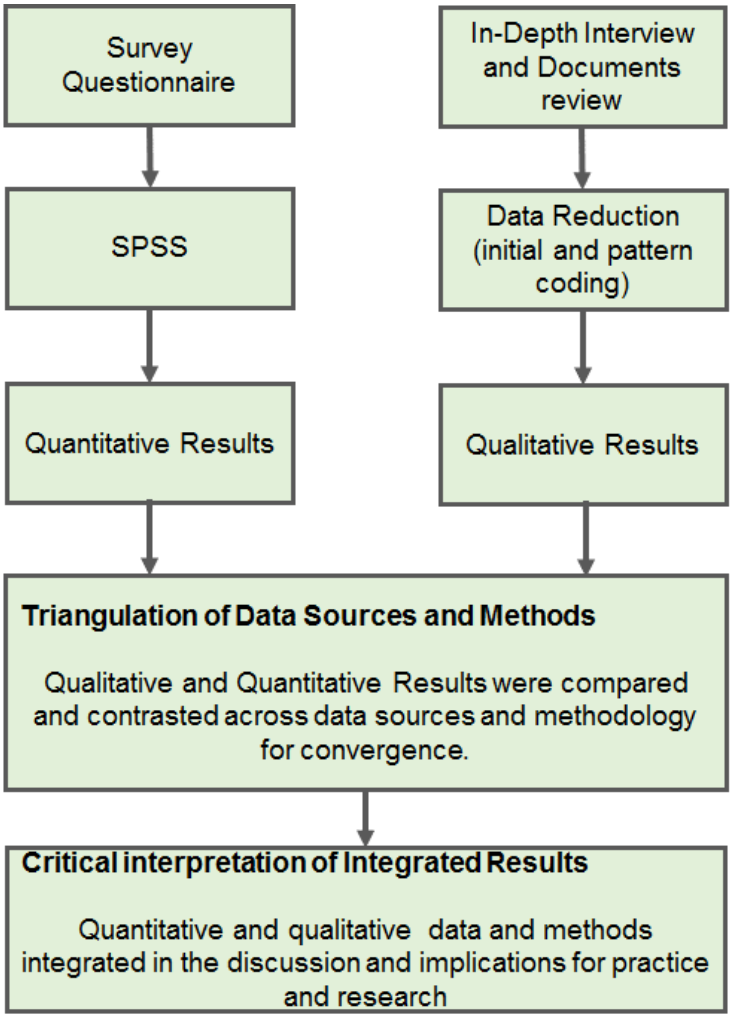



Figure 46: Steps conducted in a mixed-methods triangulation study
Source: Punch (2015: 172)

In this study, triangulation involved conducting qualitative and quantitative analyses separately. The results were then compared and contrasted to identify data convergence and divergence (see Figure 46). The most important advantage of using multiple sources of evidence is the development of converging lines of inquiry (Bauwens, 2010). Any finding or conclusion in a case-study is likely to be much more convincing and accurate if it is based on several different sources of information,

following a corroboratory mode (Creswell, 2014b). Therefore, multi-method triangulation that determines data convergence in support of a phenomenon increases the validity of research findings by (Williams & Shepherd, 2015), thus providing analytical opportunities not available when using a single method.

The complexity of the current study thus required an analytic strategy that integrated the data rather than addressing each source individually. The convergence in data analysis emerged from the researcher's efforts to examine an individual data source within and against multiple data sources first and subsequently to integrate these individual strands in the light of the larger context of the case.

To demonstrate instances of convergent data, results of the questionnaire reflected the sentiment expressed by the GDH employees about the appropriateness of the need for a shared knowledge repository that would include healthcare policies and regulations and how to apply them and GDH strategy and operational plans. The same suggestions were made by all 35 interviewees. This was corroborated by the responses from 17 survey items on knowledge acquisition, knowledge-sharing, knowledge retention and knowledge application practices in the GDH.

Data convergence was further demonstrated by both interviews and questionnaire results, which indicated that in the GDH, making information accessible to all from a centralised repository presented a serious challenge to the capability of all staff members to access the information they needed to perform their tasks. This was mentioned by 348 (78%) of the survey respondents who did not believe that the GDH made any periodic knowledge contribution to the shared repository and 235 (52%) of the questionnaire survey respondents who agreed that the knowledge they needed was located in paper-based documents; 213 (48%) strongly agreed with this view.

In addition, 179 (40%) believed that knowledge was located in the heads of colleagues and 209 (47%) agreed that the knowledge they needed to do their work was stored in oddments on computers in the department. In fact, as there was no centralised place from which it could be retrieved, there was practically no centralised knowledge repository and consequently very little access to knowledge.

Convergence was also a feature of the result, where 488 (100%) of questionnaire survey respondents disagreed that information sharing never happened formally with colleagues in their departments and another 430 (96%) disagreed that it never happened with other business units. This was consistent with the view expressed by 284 (63%) questionnaire survey respondents that information sharing with colleagues in the department happens constantly in formal ways for employees to do their job and 229 (51%) who attested to sometimes sharing information with new entrants in their departments.

The above point was corroborated by all 35 interviewees, who agreed that the knowledge-sharing process should be more concerned with the flow of knowledge in the organisational KM process to ensure the creation of a learning organisation and make the organisation's collective knowledge more accessible to all employees. Thus, data collected converged, this confirming, what emerged from responses indicating that a large number of survey respondents agreed that the environment for knowledge-sharing was important to employees and enabled them to perform better.

Another instance of convergent data was that 206 (46%) questionnaire participants agreed that management interaction and communication constituted a knowledge gap that mattered in the fulfilment of their duties. 255 (57%) questionnaire survey respondents indicated that their interaction with co-workers often positively affected the sharing of knowledge. They also agreed that interaction and communication with co-workers had helped them in the past, with 206 (46%) saying that this happened often and 157 (35%) saying always.

This was consistent with the view of the majority of interviewees that communication and collaboration characterised knowledge integration, sharing and application in teams and that distributed organisational knowledge using team structures facilitated innovation beyond that possible from solely using policies and procedures. This is further corroborated by what emerged from the analysis of the GDH organisational document, which suggested that communication and interaction in teams constituted the knowledge creation process, which referred to the development of new knowledge from data, information or prior knowledge.

The point of this suggestion was that communication and interaction or teamwork between all stakeholders, from management in the GDH, healthcare administrative staff to healthcare professionals, were vital in the co-ordination of KM practices and maintenance of quality HSD.

Data convergence was also demonstrated by both interviews and survey results, which indicated that the bureaucratic and protocol-driven corporate culture in the government organisation, characterised by lack of trust, management commitment and perceptions, had an impact on willingness to share knowledge. Interviewees emphasised the fact that leaders must instil a knowledge-sharing culture either through reward and recognition programs or employee performance management.

The organisational documents reviewed also raised the issues of OS and culture, although it was pointed out as a concern that there did not seem to be any particular understanding or enthusiasm among leaders to instil a knowledge-sharing culture, either through employee performance contracts or methods such as the balanced score card.

Therefore, this required the GDH to be a learning organisation through the implementation of its knowledge-sharing and transfer strategies, as outlined in organisational documents, necessitating a change in OC and knowledge-sharing and transfer interventions. This was consistent with the view of all 496 (100%) survey respondents who agreed that they held staff meetings regularly as social or formal interactions among staff members to allow for the creation and sharing of knowledge.

In addition, 246 (55%) survey respondents indicated that they held staff meetings monthly, 125 (28%) bi-weekly, 44 (10%) weekly and 33 (7%) daily. Thus, data collected converged in confirming that OC not only defines the value of knowledge and the advantages that knowledge creates for the organisation but also influences the willingness of employees to create, share and use knowledge with other employees in the organisation.

### 5.5.10. Data inconsistency

An important element in data integration is the possibility of conflicts among the different data sources. Data sources may conflict at data value level, which is defined as data inconsistency (Wang, Huang, Xu, Zhang & Chen, 2011). A data value level inconsistency exists when two objects obtained from different data sources are identified as versions of each other and some of the values of their corresponding attributes differ.

Occasionally, two or more independent sources of information, or the results of one or more methods may contain values that purport to represent the same real world value (Wang *et al.,* 2011). If these values are different, the representations are said to be inconsistent. Thus, while some results obtained from the same data collection method could produce inconsistencies, results from the survey, for example, were not necessarily always consistent with those from the interviews, or document analysis.

One example from observations was that 180 (40.2%) of the survey respondents agreed that knowledge and information mean the same thing and 210 (46.9%) strongly agreed. In the same breath, 415 (92%) agreed that KM is the same as information management. However, 398 (88.8%) said that knowledge depends on information and 382 (85%) disagreed that KM includes information. Moreover, 403 (90%) indicated that the concept of knowledge was difficult to clearly articulate.

If survey respondents were so certain that knowledge depends on information and that KM includes information management and yet confirmed that the concept of KM is the same as information management and that the concept of knowledge is difficult to articulate, then the distinction between information and knowledge must have been very clear to them. That could have had an impact on the choice of response that survey respondents made.

Another instance of inconsistency was that ICT infrastructure and related facilities are in existence at the GDH for coded information in databases, the internet, intranet, departmental websites, DoH websites, government websites and other forms of

electronically accessible documentation. To a large extent, employees at the GDH have access to this technology and use it collaboratively to share their tacit knowledge by means of social interaction.

This view was not supported by most of the interviewees, who indicated that information sharing was inefficient due to a lack of support from inefficient ICT infrastructure; 314 (70%) survey respondents indicated that the organisation had not invested adequately in ICT for knowledge creation, knowledge transfer and knowledge-sharing and knowledge application. The inconsistency is in the fact that employees do not believe in the adequacy of ICT infrastructure to support KM.
There was another instance of inconsistency between what was reflected in the survey where 293 (65%) survey respondents agreed that organisational policies and directives prevented them from sharing and storing knowledge and information effectively and pointed out the lack of operationalisation of enabling policies to promote knowledge-sharing and retention.

On the other hand, it emerged from the analysis of organisational documents and was further corroborated by the interviewees, that there was a need for KM policies to address the issues of knowledge creation, knowledge retention, knowledge-sharing and knowledge application. The inconsistency is the fact that had the GDH KM policies and programs been implemented or operationalised, staff at the GDH would be more comfortable with executing them.

Another area of inconsistency involved part of the very reason for this study, namely that the GDH needs to improve OP and HSD. Organisational documents revealed that the GDH was aspiring to be part of a developmental state and therefore needed to increase its capacity to innovate in order to fully participate in the global knowledge economy.

The message emphasised throughout the policy and strategy documents is that organisational KM is a priority for the GDH organisation as a whole to create new knowledge, disseminate it throughout the organisation and embody it in HSD and OP.

However, the survey respondents indicated that the organisation did not provide them with the necessary environment to allow sharing of knowledge and information.

Of the survey respondents, 377 (84%) did not believe that the relationship between them and their bosses helped with the flow of information, mainly as a result of the highly-politicised environment where face-to-face meetings in a bureaucratic environment such as the GDH was a challenge and required observance of protocol and respect for seniority. This was also supported by 241 (54%) survey respondents who rated the GDH as poor in providing a better environment for improving the work of knowledge employees and a further seven (2%) who rated it as very poor.

### 5.5.11. Contradictory data

An increase in the volume and variety of data due to the several methods employed to collect it, has posed a huge challenge to handle divergent data from multiple sources. Thus, contradictory results indicate responses that reflect facts that seem to head in divergent directions. However, Chan, Fung & Chien (2013) also highlighted the need for researchers to present and examine contradictory data that tended to oppose confirmation of the research conclusions because the presentation of contradictory data contributed to the validity of the study.

In this case-study, a review of the organisational documents revealed the existence of documented strategies and an operational plan for KM across the organisation. The KM concept features very strongly in the GDH organisational strategies and operational philosophy and objectives. This was corroborated by 121 (27%) of the questionnaire survey respondents who believed that their leadership and management supported KM by holding departmental meetings and 111 (25%) who indicated that management explained policies and strategies to staff.

However, 242 (54%) of the survey respondents indicated that there were no KM strategies and policies in their respective departments. They were supported by a further 23 (5%) who indicated that there was no KM strategy and that it was not even specifically mentioned in the strategy documents. Moreover, 91 (20%) of the survey

respondents mentioned that there was no written KM strategy and that the GDH had not initiated KM practices in the department.

The researcher interpreted that meant that sometimes employees did not read the organisational high-level strategies, vision and mission but tended to look at the operational requirement at their level. This clearly suggests that despite mention of the KM policies alluded to in the organisational documents (policies, strategies and operational plans), no KM practices and initiatives are implemented at the GDH. Also, the implementation of departmental strategies and operational plans has always been problematic in the public-sector. Therefore, the impact of these sentiments on GDH performance and delivery of healthcare service could be negative because KM practices are not implemented.

Another area of contradictory data is that 231 (52%) of the survey respondents stated that their organisation did not have a KM program and there was no intention of considering the implementation of one. A further 118 (26%) survey respondents did not know anything about the existence of such a program in their organisation, or whether one had been implemented.

This point was further confirmed by a further 355 (79%) survey respondents who did not know anything about the level of promotion of the KM program in the organisation. This was corroborated by almost all interviewees who believed that the loss of knowledge at the GDH was a result of several factors, including high staff turnover, inability to retain experienced and qualified staff, lack of KM programs, lack of succession planning and ineffective information management.

Contrary to this, the organisational documents review revealed that staff development programs, performance measurements, succession planning, job rotation, job promotion and performance rewards programs were in place as a way of reducing the negative impact of staff turnover by capturing and retaining peoples' knowledge during their employment.

The researcher interpreted that to mean that it is often the case in the public-sector that strategies and operational plans are formulated but never implemented, as the day-to-day operations are dictated by healthcare policies and regulations and acts of parliament governing healthcare services. The impact of this is that OP and HSD as business imperatives and key performance areas become secondary.

## 5.6. Knowledge management capability dimensions

Within the context of KM capability, the focus was to develop the KM capability dimensions through deploying knowledge governance mechanisms that are conducive to facilitating knowledge processes so as to produce improved OP and HSD over time.

### 5.6.1. Knowledge infrastructure capability

In this dimension, three themes were identified: information technology, OC and OS. See Figure 47 (page 342 ).

#### 5.6.1.1. Information technology

A number of factors influence the participants' views regarding how IT is supporting KM, including how they perceive the usefulness and the ease of use of ICT to enhance OP and HSD.

Executives in GDH want ICT that is accessible, similar to the social networking tools that they use in their everyday life, for example, Twitter, Facebook, YouTube, Wikipedia, smart phones and google.

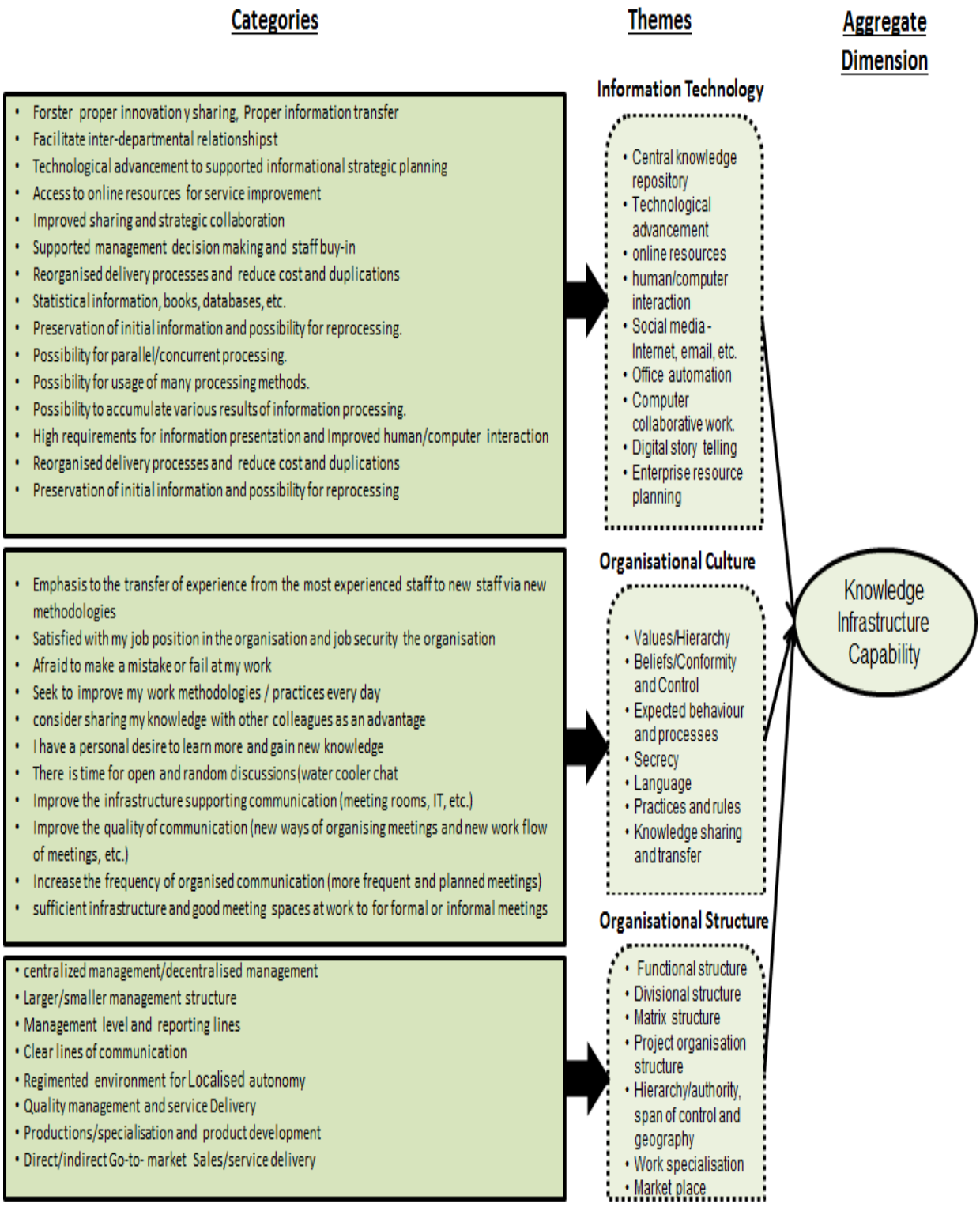



Figure 47: Knowledge infrastructure capability – data structure

Despite the various definitions of KM, almost everyone agrees on the significant role technology plays in KM (Mao *et al.,* 2015). In fact, KM is frequently positioned as comprising mainly efficient and effective IT and ICT systems (Pandey & Dutta, 2013).

For this reason, using technology systems (and communication technologies) is a key element that may be incorporated into knowledge application initiatives.

While the specifications of applications and technical systems vary, the overarching purpose of IT is to capture, share, transfer, distribute, retain and maintain knowledge resources. The focus of knowledge application strategies and policies is on technology and management of explicit and tacit forms of knowledge.

This view is supported by the study findings, which revealed that the use of ICT for knowledge application to improve OP and HSD was highlighted in the organisational documents. The documents emphasised the use of technology to guarantee the effective application and usage of knowledge (Newell, 2015) within the GDH.

The literature in Chapter Two also emphasised the role of IT in facilitating KM processes through its supporting infrastructure (Yusof *et al.,* 2012). The absence of IT would therefore result in an incomplete KM process. Consequently, the integrated KM model will also place emphasis on the role played by IT (Yusof *et al.,* 2012); Lam & Lambermont-Ford 2010).

This was also found to be the case in the GDH organisational documents, which referred to the need to improve the department's ICT infrastructure and mechanisms to allow for speedy processing and storage of information (GDHSD, 2010). This, it was concluded in the organisational documents, would effectively enable employees' knowledge to be transferred into either a paper-based format or information system electronic files so that everyone can continue to access that knowledge and analyse it long after that employee has left the organisation. Participants want KM in their organisation with advanced and smart searching tools that can enable them to search and find knowledge quickly.

They believe that KM can enhance their job as was captured by an interviewee who said:

> I want KM to be like a Google search; when you search for something, it keeps and saves it in your history and links it to your next or future search.
>
> **Interviewee C**

And

> Sometimes, I feel information technology is complicated and I want an easy system to be used, like Wikipedia, Facebook, Google, mobile applications, which I can use easily without having any training.
>
> **Interviewee A**

However, this risk was never adequately addressed, as demonstrated by the study's survey findings that 70% (n=314) survey respondents believed that the GDH rarely invested extensively in ICT to promote information sharing, 56% (n=250) indicated inefficient technology as the biggest barrier to knowledge-sharing and the same number of 250 (56%) survey respondents agreed that the GDH technology was inefficient. With regard to the knowledge gaps that mattered in the fulfilment of their duties, 62% (n=277) survey respondents specified lack of appropriate technology to create and share knowledge. The GDH supported the view that ICT provided support for knowledge application and the important role that the ICT OC played in successful knowledge application in the department (Newell, 2015). This view was confirmed by the findings of the study, as 37% (n=166) survey respondents stated that the practice of KM was enhanced by the internet, 23% (n=101) mentioned e-mail, 20% (n=91) mentioned information systems and 20% (n=90) mentioned the intranet as playing a role in enhancing the environment for knowledge application practices.

Further study survey findings also revealed that 31% (n=139) survey respondents mentioned that they gathered and shared knowledge using technology mediums such as e-mail, internet and information systems and a further 49% (n=220) survey respondents indicated e-mail and intranet as the preferred medium in their knowledge-sharing environment, 31.4% (n=141) mentioned meetings, 18.3% (n=82) internal memoranda and 1.1% (n=5) mentioned a central data repository. The use of ICT was further confirmed by the findings from the study, as 55% (n=264) survey respondents

believed that the departmental and government websites were the tools, methods and techniques used for knowledge creation and application, 35% (n=157) used internet and e-mail and 10% (n=49) used mostly ICT as the technique to achieve knowledge creation and application.

> We have an intranet and internet which keeps all employees updated with all best practices, new legislation, events and training), Through these we get new ideas, create discussions, answer questions, solve problems and clarify how to do work and why.
> **Interviewee F**

The responses above reflected the GDH strategy that relied increasingly on the application of modern ICTs, particularly those aspects of ICT related to KM, so as to enhance global competitiveness and improve performance and HSD (Newell, 2015). With the use of ITC, old knowledge or information, which is not necessary for daily use, can be archived on a centralised database or shared folders to enable new employees to acquire the knowledge as quickly as possible and very easily. Nonetheless, the findings from the study revealed that the failure of the GDH to invest in upgrading and modernising its ICT is precisely the serious challenge facing the department. The GDH has failed to fully implement a key KM process and a business imperative in the organisation in the form of a centralised knowledge repository.

This was expressed by the interview participants in the previous paragraphs and was confirmed in the study's survey by 334 (75%) survey respondents who mentioned the lack of a centralised database at the GDH as a serious challenge to KM. This challenge was further compounded by the GDH's inability to make a periodic knowledge contribution to update the knowledge in the shared repository, which was confirmed by 348 (78%) survey respondents.

> We want to have one system that can control, manage and update the knowledge shared between all departments and regional healthcare centres to avoid any problems.
> **Interviewee M**

The non-existence of a centralised knowledge repository or a poorly maintained knowledge repository at the GDH is a serious inhibitor of KM implementation in the organisation (Camison & Villar-Lopez, 2011). The study's survey findings revealed that 235 (52%) of the survey respondents mentioned that the knowledge that they needed was located in paper-based documents and 179 (40%) survey respondents indicated that it was located in the heads of colleagues and therefore not readily available or accessible.

The findings of the study's survey also demonstrated that a further 199 (44%) survey respondents stated that minutes of meetings were kept in a general office, which implied that these were stored in hard copies and catalogues; 93 (21%) survey respondents said that these minutes were kept in a manager's office and six (1%) believed that no minutes were kept at all.

209 (47%) survey respondents in the study's survey mentioned that the knowledge they needed to do their work was on computers scattered in the department, which made it even less available and accessible. These findings show that the information in the GDH is not centralised in a shared knowledge repository and it is of little value, as it cannot serve the concept of knowledge-sharing and knowledge application (Grant, 2015) effectively.

The study findings highlighted the critical KM requirement of creating a centralised knowledge repository for storing, accessing, organising and communicating knowledge. It highlighted that knowledge gained by employees over a period of time can be retained/stored in a centralised knowledge repository or shared folders for future reference, even when the original authors have long since left the organisation. One of the goals of KM, as discussed in Chapter Two, is to deliver the intellectual capacity of the organisation to the knowledge workers (Reddy & Govender, 2014) who make the day-to-day decisions that determine the success or failure of business.

According to Balkumar, Thomas, Anbuudayasankar, Ganesh, Silvian and Joy (2014) and Evans *et al.* (2014), a centralised knowledge repository plays an important role in preserving organisational memory (Camison & Villar-Lopez, 2011). Therefore,

effective use of ICT through the creation of a centralised knowledge repository by the GDH can support the knowledge creation/acquisition, knowledge retention/storage, knowledge transfer/sharing and knowledge application/use processes of a KM strategy. Be that as it may, IT is only one form of memory that employees consult when solving problems – and its use is limited (Newell, 2015).

The pronouncements above, in terms of the findings of this study's survey, are not evident within the GDH, as 250 (56%) survey respondents highlighted serious ICT challenges in supporting KM in the GDH, specifying inefficient technology as the biggest barrier to knowledge application; 208 (46%) survey respondents indicated poor information systems as the biggest obstacle to knowledge-sharing and 277 (62%) survey respondents specified lack of appropriate technology as a serious problem in creating and sharing knowledge.

Therefore, the study's survey revealed that knowledge that the survey respondents received was not stored in a common repository at the GDH. This is supported by 250 (56%) survey respondents, who agreed that the GDH technology was inefficient and 208 (46%) who believed that poor information systems were another reason why knowledge was not stored or shared.

#### 5.6.1.2. Organisational Culture

The OC affects the way employees interact with one another and their managers, customers and stakeholders. One of the interviewees emphasised the importance of OC in the GDH:

> In our organisation, the vast majority are black Africans but we have diversity programs in our organisation to assist with teamwork and collaboration. The medium of communication is English in all work-related communication to facilitate knowledge-sharing and transfer.
> **Interviewee O**

Training and organisational learning affect KM as well. As its whole purpose is to learn something new and as there is a great deal of knowledge to be shared during training, the environment and atmosphere during training encourages and enables individuals to work as a team, share knowledge, collaborate and learn new issues:

> I feel I can easily share knowledge when I do training, as I meet with different people from different business units and regional healthcare centres and the environment itself is suitable for asking questions and sharing knowledge immediately at the same time and if anyone has comments, he/she will say it immediately during the discussion.
> **Interviewee S**

Most of the interviewees at the GDH consider OC as one of the key factors affecting OP and HSD. Most emphasised that regardless of employees' ethnological orientation or origin, OC is the dominant culture in the company. The organisation should operatively have in place a policy to encourage employees to share knowledge by rotating jobs and not to allow them to spend more than five years in any one position; this rotation enables employees to reap the benefits of knowledge-sharing/transfer they have and opens them to new experiences.

Participants also drew attention to human resources management intramural to the GDH, as they see this as the most important department in the organisation. KM must start from HR as they recruit people, encourage them to develop their careers and motivate them with incentives to share knowledge all the time:

> Regarding the culture of sharing knowledge, our must put in place specific guidelines to be followed in knowledge-sharing and there must be a compulsory course to be attended by employees; we believe that an organisation without cultures and rules is an organisation without future.
> **Interviewee B**

> My organisation must encourage knowledge-sharing and must reward the employees who share the most valuable knowledge that benefits the organisation. I think to encourage employees to share their knowledge inside the organisation, it will be good if the HR department put the sharing of knowledge as a part of each employee's key performance indicators and give employees a guide regarding how to share knowledge as a part of their job description.
> **Interviewee M**

#### 5.6.1.3. Organisational Structure

Some interviewees indicated that it is important to know and understand their roles within the organisation and further, to have clear job descriptions and responsibilities.

> It is essential to have a reliable in the department an instrument for defining employees' current position, roles and responsibilities and driving long-term organisational development.
> **Interviewee AC**

The views expressed by some executives were that they wanted an instrument that could allow a holistic assessment of the KM activities for the department which covers all relevant key areas of KM; derives suitable steps for development which are based on the current status of KM and thus indicates the most appropriate starting point before a KM project is actually inaugurated; supports on-going development of the company through KM.

They also stated that the OS should be formulated in such a way that it has a model that should provide qualitative and quantitative results and take into account the different views of the participants on what is KM and the role of KM in the department; there should be a structured approach which ensures transparency and reliable handling of the KM activities; and that the underlying structure should be less bureaucratic – if possible – to allow team collaboration and knowledge-sharing.

Two of the interviewees mentioned that:

> Organisation has the resources and has developed the ability to adapt flexibly in order to meet new requirements in KM without dropping a maturity level. **Interviewee AC**

> The OS must facilitate collaboration culture and address the collective soft factors which have a significant influence on the KM of the department. These include topics such as OC, internal and external communication and team structures or network and relationship structures.
> **Interviewee X**

### 5.6.2. Knowledge process capability

In this dimension, four themes were identified, namely, knowledge creation/acquisition, knowledge-sharing/transfer, knowledge retention/storage and knowledge application/use as shown in Figure 48.

Interview results are expressed in the section that follows.

Among interviewees representing the managerial level, there was some uncertainty and confusion between knowledge and information, as well as between KM and information management.

The majority of them used knowledge and information interchangeably and tended to refer to knowledge as experience. There was a strong perception that KM was a technology that was also a sub-set of HIS used to store and process information faster and could be shared among employees and across the department.

One participant expressed that:

Provision of [an] enabling environment and adequate training on ICT are crucial for effective information management. There are many financial constraints, political constraints, skills shortage in the application of ICT in information management of the GDH and general hospitals.

**Interviewee D**

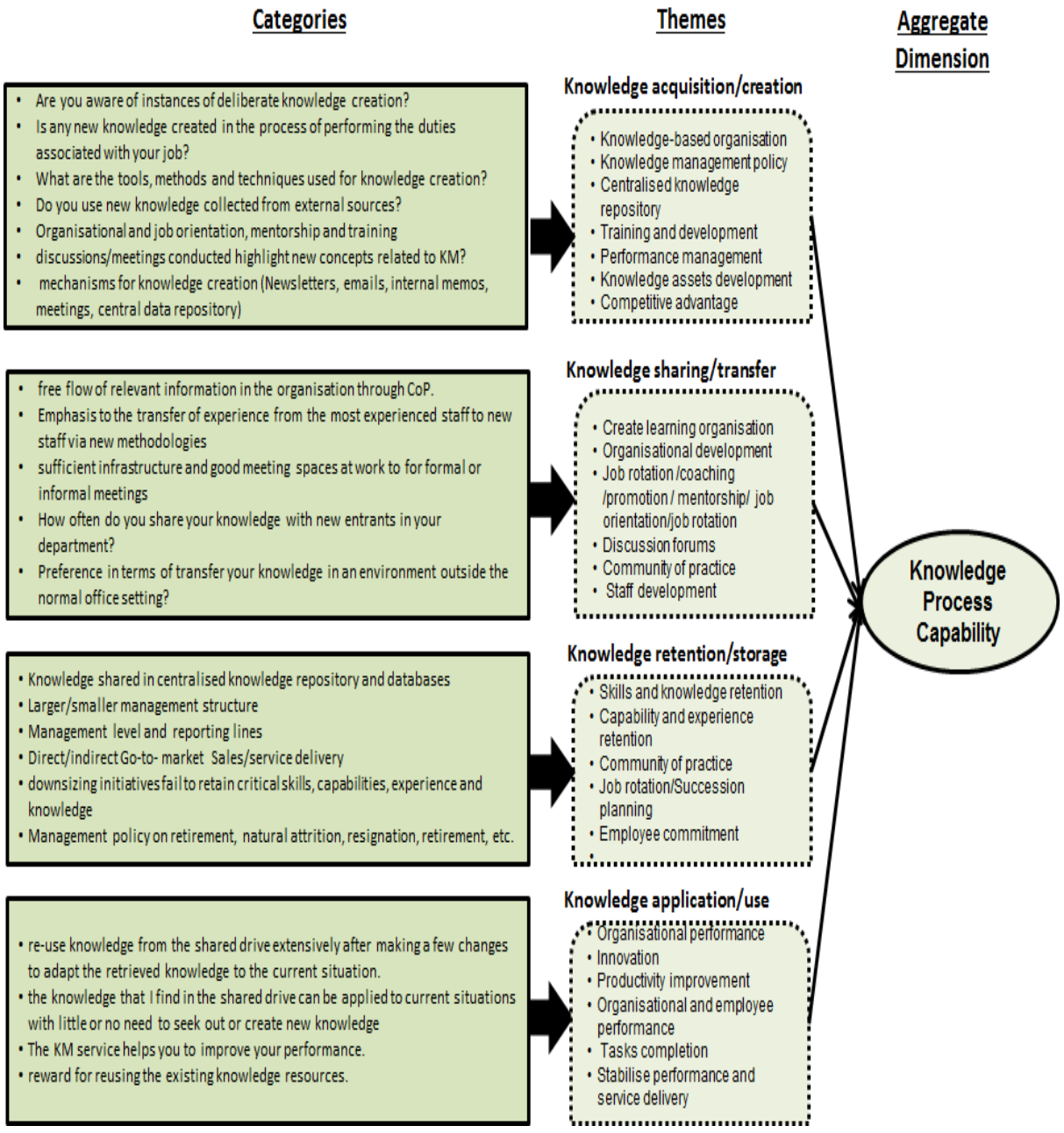



Figure 48: Knowledge process capability- data structure

Another participant said:

> There is a general acceptance that HSD and patient safety is the responsibility of all professionals involved in the provision of healthcare services. Currently, information management is a contributing factor to poor HSD. Information management in decision-making in the department, hospitals and healthcare facilities must provide quick and accurate information and timeously. Therefore, it will be beneficial for the GDH to focuses on the means to improve information management on clinical level decision-making and managerial information management.
>
> **Interviewee B**

#### 5.6.2.1. Knowledge creation/acquisition

Most of the participants in the interviews suggested that for the GDH to achieve improvement in OP and HSD, the organisation should attempt to associate OP and HSD strategy with the information and knowledge creation process. They all remarked that co-operation and teamwork among their employees was important to allow the creation and sharing of information. Evans *et al.* (2014) and Shahzad *et al.* (2013) confirm this, asserting that without the constant creation and sharing of knowledge, a business is condemned to poor performance.

They firmly believed that effective team interactions or group work accomplished the successful implementation and execution of healthcare policies and legislation. This view emphasised the theory of knowledge creation through a dialectical process, with contradictions synthesised through interactions (Nonaka *et al.,* 2006). It also distinguished KM using IT among individuals, groups, organisational and inter-organisational levels of knowledge creation (Nonaka *et al.,* 2014).

One interviewee felt that:

> Departmental and individual performances are improved and tasks completed accurately and timeously through teamwork and sharing of knowledge thereby assisting other staff members to acquire more knowledge and learn in the process.
>
> **Interviewee B**

These interactions of teams constituted the knowledge creation/acquisition process, which referred to the development of new knowledge from data, information or prior knowledge. The creation of new explicit knowledge relied directly on combining prior knowledge, whereas the discovery of new tacit knowledge relied most directly on socialisation (Pandey & Dutta, 2013).

All interviewees claimed that individual staff members learnt exactly how the knowledge and experience of colleagues could assist them to excogitate innovative solutions to resolve problems and improve their job performance. The implication of this general view and approach by interviewees was that, if formalised, their departments would be willing to work cooperatively within the ambit of the GDH, as well as, with other regional healthcare service centres.

A strong view expressed by many in the interviews was that in the current public-sector transformation process, knowledge and experience have been acknowledged as valuable assets and for that reason, the GDH was seeking ways of creating, managing and possessing this knowledge. It was very important for the GDH to have a KM policy that would be well-understood by all employees.

This was in line with the summation by (Pandey & Dutta, 2013) and (Chuang *et al.,* 2013) that organisations are facing complex challenges of improving, inter alia, their OP and service delivery, as well as, dealing with on-going demands for organisational transformation, organisational governance structures and knowledge creation.

Therefore, it has become crucially important to offer policy for the organisation to understand the key variable that plays a decisive role in the organisation's performance. Organisational knowledge creation is the capability of an organisation,

as a whole, to create new knowledge, disseminate it throughout the organisation and embody it in the services it provides. Thus, all interviewees realised that the GDH had to use its knowledge assets effectively to improve OP and HSD. Having a well-defined KM policy was suggested by most of the interviewees as well as an urgent intervention necessary to create and assess the right information and knowledge for the benefit of the employees and the department.

All the interviewees agreed that the GDH should define an organisational policy for KM. To achieve improvement in OP and HSD, such an organisational policy on KM should attempt to associate OP and HSD strategy with the knowledge creation process.

Through shared knowledge, individual employees would acquire knowledge they earlier lacked and they could then synthesise this knowledge with their prior knowledge to create new knowledge. This reinforces the view by scholars like Plessis and Sukumaran (2015) and Cohen and Olsen (2015) that support from leadership level is essential for successful implementation of KM.

In the same vein, the aforementioned interviewees acknowledged in their responses to the researcher's probing questions that for any policy to be implemented successfully, there must be buy-in from employees, who are the key intellectual assets of the organisation. In this respect, the researcher asked interviewees if staff development programs, performance measurements, succession planning, job rotation, job promotion and performance rewards were in place as a way of reducing the negative impact of staff turnover by capturing peoples' knowledge during their employment.

Most of the interviewees described the GDH or public-sector in general as seriously lacking in staff development programs, performance measurement, succession planning, job rotation, job promotion and performance rewards and recognition.

In fact, one of the interviewees expressed the sentiment that:

> Staff in the public-sector are treated like commodities as there are no human resources programs like performance management, reward and recognition programs, succession planning, job rotation or job promotions.
> **Interviewee A**

#### 5.6.2.2. Knowledge-sharing/transfer

All interviewees agreed that in their respective departments they shared information or knowledge with their employees regularly and those individuals also shared limited amounts of information and knowledge on various tasks in their respective divisions and across the department. One interviewee contended that:

> There are so many changes in the healthcare regulations, healthcare related acts of parliament and policies due to the public-sector reform initiatives, such that it is difficult for any one individual to keep up without consulting with others regularly.
> **Interviewee C**

Another suggested that:

> There is a need for a shared knowledge repository where employees could find accurate interpretation of the healthcare policies and how to apply them on their day-to-day operations. **Interviewee D**

By sharing knowledge across organisations, workers could improve their performance and the quality of the service they provided (Sandhu *et al.,* 2011). According to the responses from the interviewees, this seemed to be an area the GDH needed to prioritize.

When asked about how they shared knowledge or information on tasks and operations in their respective divisions, the interviewees showed intense interaction and

consultation in sharing information or knowledge with one another across the department. There was a sentiment that:

> It would serve their department better if there were regular forums to discuss the implications of changing healthcare legislations, acts and policies and these be documented and stored in a shared directory.
> **Interviewee G**

Another added that:

> Information sharing is not efficient due to lack of support from the current inefficient ICT infrastructure.
> **Interviewee E**

All the interviewees agreed that to ensure the creation of a learning organisation and allow the organisation's collective knowledge to be more accessible to all employees, the knowledge-sharing process should be more concerned with the flow of knowledge in the organisational KM process.

It appeared, therefore, that the ability to share knowledge was a key component of KM. The interviewees also agreed that the effective flow and application of knowledge through the knowledge-sharing process could lead to improved OP and HSD.

Most interviewees viewed e-mail, electronic notice boards, the internet and intranet as the technological mechanisms used most often for extensive knowledge-sharing. All 35 participants interviewed indicated that while the role of technology in facilitating knowledge-sharing through its supporting infrastructure cannot be denied (Yusof *et al.,* 2012), such support cannot disregard the role of human individual interaction; a critical factor in any organisation.

Another preferred mechanism at the GDH, over and above technology, was the meetings where all employees interacted with one another, discussed and debated issues as a means of gaining knowledge while satisfying their information needs.

Nevertheless, even if there were regular meetings which were to a large extent a forum for leadership to give instructions, the interviewees agreed that face-to-face meetings in a bureaucratic environment such as the public-sector could pose challenges. A key reason for poor knowledge or information management viability, or its absence, was the unwillingness of employees to share their knowledge effectively in an open forum, like meetings, with their peers. Various reasons for this were advanced by interviewees:

(a) Because employees in the department come from different backgrounds, employee ethnicity has an impact on willingness to share knowledge. One interviewee mentioned that:

> Ethnicity was a difficult subject for many employees in a diverse workforce like the public-sector. Some employees feared being labelled as a racist if they articulated their true feelings.
> **Interviewee G**

Another interviewee supported this view:

> South Africa as a developing country has many challenges, including poverty, low levels of education, skills shortages and high levels of crime. It has been found that knowledge is not effectively shared because of cultural barriers.
> **Interviewee E**

The divisions in the department consequently tend to operate in isolation. Ultimately, mandates of government organisations or business units are seldom achieved, resulting in poor HSD to the citizens of the country.

(b) Employees' ages also had an impact on their willingness to share knowledge and was likely to stifle knowledge-sharing. This view was raised by Mårtensson (2013), specifically that, age, trust and collaboration are shown to be common inhibitors

to both knowledge sharing and transfer activities. One of the younger participants confirmed that:

> Age might be an issue in knowledge-sharing. The participants observed that older employees had more problems in sharing and obtaining knowledge for their own use and strongly believe that knowledge is power and they are trying to hold onto some of their advantage over other employees. I think older people have this problem more.
> **Interviewee H**

(c) Employees airing their sentiments on different levels of education and employee ethics maintained that colleagues were likely to reduce the sharing of common experiences and thus to affect willingness to share knowledge negatively (Mannie *et al.,* 2013); one interviewee confirmed that:

Employees with higher education shared more. On the other hand, employees with fewer qualifications might want to share less because that's just their upbringing and they might feel more threatened.
Interviewee B

(d) The bureaucratic and protocol-driven corporate culture in the government organisation, characterised by lack of trust, management commitment and perceptions, according to among others (Muneer, Javed Iqbal, Khan & Choi Sang, 2014), had an impact on willingness to share knowledge. One interviewee expressed the view that:

> In some cases, people may hesitate because of the political ramifications and victimisation. They may be fearful to speak up about something that others may not agree with. They might be afraid that what they say will not be well received by others – particularly their managers. Thus, fear of disagreements or fear of looking foolish.
> **Interviewee F**

Another participant summed it up well by saying:

> That knowledge or information sharing was a key strategic asset for organisations of all sizes.
> **Interviewee H**

It followed then that KM has both advantages and disadvantages, successes and failures. Participants pointed out that there was some level of knowledge-sharing within the department. They also pointed out a variety of reasons for knowledge- or information-sharing problems. Some interviewees found that ICT was an issue, some felt that the emphasis was on OC and human aspects, such as, the unwillingness of employees to share their knowledge effectively with their peers.

The responses during the interviews demonstrated that although there was a limited level of information or knowledge-sharing, there could be some barriers to the process itself.

Interviewees emphasised the fact that leaders must instil a knowledge-sharing culture either through reward and recognition programs or employee performance management. The interviewees generally agreed that it was imperative for leaders to acknowledge that KM was a discipline that offered strategic advantages.

#### 5.6.2.3. Knowledge retention/storage

Knowledge retention involves capturing knowledge in the organisation so that it can be subsequently used. Most organisations are faced with the problem of losing their intellectual property or knowledge and thus proactive responses such as knowledge retention are being implemented to retain both tacit and explicit knowledge. Most of the interviewees agreed that knowledge retention was often only referred to in the context of losing key employees and using techniques such as exit interviews in an attempt to capture their knowledge.

One of the interviewees stated that:

> In reality, knowledge retention should be integrated into the organisation KM strategy and start well before a key employee is about to depart.
> **Interviewee I**

A knowledge retention strategy should identify the knowledge resources that are at risk and must be retained and then implement specific initiatives so as to keep these resources in the organisation. This practice could improve the speed of learning of new or incoming employees. Knowledge becomes manageable and reusable only if it is recorded and made available. However, participants noted the lack of a knowledge retention policy in the GDH.

Interviewees stated that the loss of knowledge at the GDH was a result of several factors, including high staff turnover, inability to retain experienced and qualified staff, lack of KM programs, lack of succession planning and ineffective information management. One participant summed it up well by saying:

> People's heads have been and will always remain the natural repositories of knowledge storage and retention.
> **Interviewee H**

However, because people leave the organisation for various reasons, the organisation is crucially compelled to develop an organisational memory (Rasula *et al.,* 2012) and the implementation of knowledge retention policies (Chigada & Ngulube, 2015) as a crucial element of KM.

Most of the interviewees acknowledged that there was a need for KM policies and mechanisms that would effectively enable individuals' memories to be "transferred" to a centralised repository or an information system so that everyone in the department could continue to access other employees' knowledge and their analysis of that knowledge long after those employees have left the department.

In addressing this risk to the department, one participant agreed that:

> It is crucial that the department must recognise the importance of unlocking each employee's memory and develop systematic ways of ensuring that its staff members' knowledge and experience are made widely accessible to colleagues. **Interviewee K**

One of the common sentiments among the interviewees was that the current information systems and technologies that existed in the department had failed to provide the mechanism to capture and retain knowledge in the department. There was an indication that employees were aware of the availability of the IT platform where colleagues share knowledge and information but they shared only the information that was relevant to the situation or problem being addressed.

When asked whether ICT was the best information storage mechanism for knowledge, all 35 interview participants agreed with the statement and added that there were other mechanisms and tools that the department was using to preserve operational knowledge that ensured sustained operations. Although some of the interviewees were not aware of the existence of knowledge preservation mechanisms in the department, they were aware of other methods, including research publications, workshops, meetings, training, exit interviews and the handover of official records and related documents.

Interview participants were also asked to propose KM strategies and initiatives as a solution to the current challenges for the improvement of OP and HSD. Of the 35 interviewees 14.3% (n=5) did not respond to this question, while 85.7% (n=30) proposed the following mechanisms for knowledge retention:

- There was a need for a comprehensive knowledge retention strategy, which should be woven within the fabric of the department as a matter of urgency because it was not known when someone would leave or retire.

- One of the primary vehicles that the department could use to identify, capture and transfer knowledge is a CoP. This process involves encouraging teamwork among staff members, understudying senior members in the department or retiring staff members and holding workshops and seminars.

- There is a need to create a central knowledge or information database or repository where all departmental strategy documents, operating plans, healthcare policies and regulations could be kept as soft copies organised in areas of specialisation.

- Senior or more experienced staff members should be encouraged to transfer knowledge to new and younger staff members.

- Conditions of service and employment have to be improved through adequate support and motivation, job rotation, job promotion, reward and recognition, performance appraisals and improvement and a generally improved work environment.

- It is necessary to implement rewards and incentives for better performance and knowledge-sharing.

#### 5.6.2.4. Knowledge application/use

There are different resources that forge the knowledge capability of the department (Ho *et al.,* 2014). These include technology, OS, OC and KM practices (acquisition/creation, sharing/transfer, storing/retention and application/usage). However, Matin and Sabagh (2015), Liu and Deng (2015) and Andreeva and Kianto (2012) found that of the four knowledge process capabilities (i.e. acquisition/creation, sharing/transfer, storing/retention and application/usage) only knowledge application was directly linked to OP. Therefore, value was created only when knowledge was distributed throughout an organisation (Liu & Deng, 2015), was located and transferred from its previous state and applied where it was needed (Liu & Deng, 2015).

Knowledge application was therefore the phase in which existing knowledge was brought to bear on the problem at hand. Knowledge use or application refers to taking stored and shared knowledge, internalising it within one's perspective and worldviews and putting it to good use (Liu & Deng, 2015). One interviewee suggested that:

> It would seem like knowledge application process is an important principle of KM which could lead to organisational value when it is used to produce effective OP.
> **Interviewee A**

With the implementation of the public-sector reform initiatives across all sectors of government, the public-sector needs to transform itself to get closer to serving the general public better with good quality healthcare services. Therefore, knowledge application was regarded by all but three of the interviewees as a mechanism to provide the solution and help the GDH to accomplish its goal by encouraging all staff members to share and apply their knowledge in order to break down functional silos and to increase knowledge flow. One of the interviewees commented that:

> Working within teams is becoming a preferred mechanism for sharing and applying knowledge that is shared across the department and in pockets of collaborative team networks
> **Interviewee K**

Armed with this understanding, all the interviewees agreed that knowledge application was the means of making knowledge more active and relevant for the department in creating value. Thus, for the creation of value, the GDH would need to apply knowledge to the HSD efforts by various means such as repackaging available knowledge and training and motivating the staff to think creatively, as well as employees' understanding of the department's processes and healthcare services. One of the participants stated that:

> We need to encourage organisational learning in which our employees and teams can apply their knowledge to initiatives such as the GDH

> Strategic and Operational plans with the ultimate aim of improvement in OP and HSD. **Interviewee J**

In general, the interviewees agreed that the creation of new knowledge that was applied effectively and efficiently would be successful at creating competitive advantage for the GDH. They agreed that for knowledge to influence departmental performance it had to be used to support the GDH's processes. Therefore, another sentiment was that:

> It is through knowledge utilisation that acquired knowledge can be transformed from being a potential capability into a realised and dynamic capability that impacts the department's performance. **Interviewee J**

Organisations that excel at knowledge application are inherently better at continuously translating their intellectual capital into innovative and high-quality services (Mills & Smith, 2011). Clearly, knowledge assets are of value only to the extent that they are actually applied in the operations of an organisation. There was a feeling from another participant that:

> Through a team structure, diverse knowledge and expertise of individuals at various divisions in the department can be assembled, integrated and applied to the task at hand.
> **Interviewee D**

And also, that:

> Rich communication and collaboration characterise knowledge integration, sharing and application in teams – and the distributed organisational knowledge using team structures facilitates innovation beyond that possible from using solely policies and procedures.
> **Interviewee H**

Interviewees emphasised collaboration and teamwork and indicated that knowledge application was about making knowledge more active and relevant for the GDH in creating value. This understanding was in line with the suggestion that knowledge application was positively related to OP (Caya, Leger, Grebot & Brunelle, 2014; Richards & Duxbury, 2015; Mills *et al.,* 2011).

### 5.6.3. Organisational Performance

In this dimension, five themes were identified: high-quality management, high-quality workforce, long-term orientation, continuous improvement, openness and action orientation. See Figure 50.

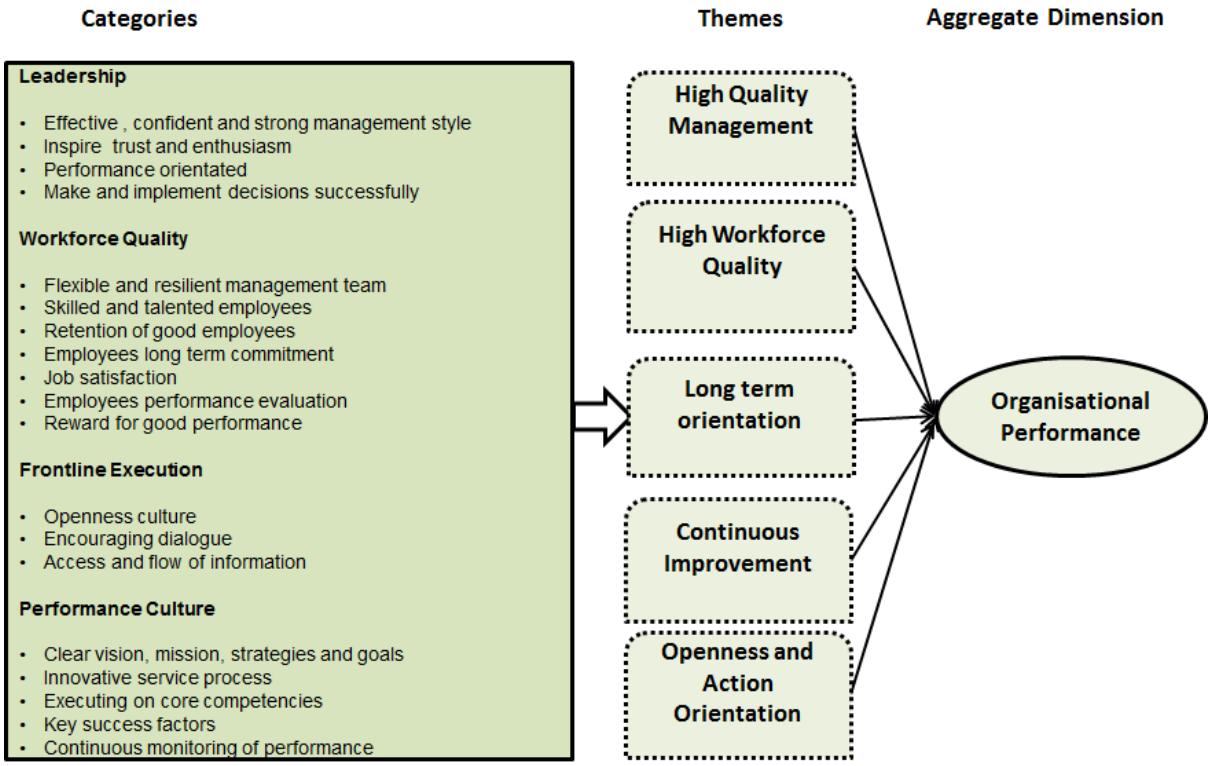



Figure 50: OP – data structure

#### 5.6.3.1. High-quality management

Leadership ensures that management develops an ethics strategy aimed at providing a road map to ensure the sustained development of individual and organisational character. Government departments have come to understand that the

implementation of KM and supporting technology, in and of itself, is not sufficient in the knowledge economy (Vimba *et al.,* 2013).

As such, they recognised that the key to increasing overall effectiveness and competitive advantage is the combination of appropriate leadership capabilities and effective knowledge resource management (Ryan *et al.,* 2012). In addition, Vimba *et al.* (2013) posited that the inclusion of effective leadership leads to greater satisfaction of employees and customers because of improved OP, which in turn will lead to the delivery of quality healthcare services.

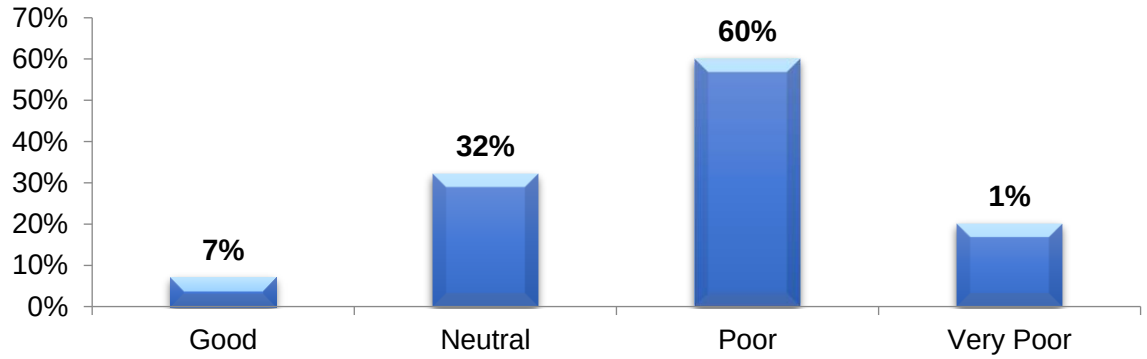



Figure 49: GDH Management encourage people to reflect on information

However, the study finding revealed that 268 (60%) of the survey respondents rated the management at GDH, or related healthcare entities, poorly in encouraging people to reflect on information and data and reframe these at the strategic level and 268 (60%) survey respondents, as presented in Figure 51, gave the management at the GDH and related healthcare entities a poor rating for their effort to encourage employees to exchange information and knowledge to solve problems.

Vimba *et al.* (2013) contended that leadership is about relationships, authority and respect, which can be improved in numerous ways. Effective leaders nurture teamwork. Teamwork draws on all the skills of a 'people person'. According to the current study, the relationship between employees and management at the GDH or related healthcare entities seemed to be far too distant and did not appear to allow for

the flow of information. The study revealed that 376 (84%) survey respondents said their relationship with their boss did not allow the free flow of information.

From the findings above, the employee and management relationship does not appear to be favourable for knowledge resource management at the GDH. This view is supported by Vimba *et al.* (2013), who states that if leadership tasks are carried out inefficiently with total disregard for the employees of the organisation, organisational KM strategy is likely to suffer and related activities are unlikely to succeed.

Ryan *et al.* (2012) also noted that the importance of leaders who champion the development of KM could not be overstated. They further stated that knowledge and information management must be guided by competent leadership. Thus, "leadership has the potential to exert a positive impact by providing direction for the development of knowledge creation, sharing and transfer within the organisation" (Ryan *et al.,* 2012: 64).

#### 5.6.3.2. High-quality workforce

A sustainable and high-quality workforce is necessary to meet future transformed public service needs and in this particular case, the HSD needs. The productive capacity of our workforce is vital in providing safe, high-quality services. This was also highlighted by one of the participants who said that:

> The department must be committed to enhancing the skills and competencies of our existing staff to meet the challenges we face and to ensuring the most efficient and effective utilisation of staff to deliver required health services.
> **Interviewee Y**

The continued efforts in the training and development of superior quality resources will continue to reshape the culture and employment experience in organisations to meet the demands of the transformed public services. There are challenges facing the GDH which were captured by one of the interview participants who said that:

> The GDH continues to face a challenging operating environment which includes the growing and ageing population; economic, fiscal and health technology impacts; a growing burden of disease, particularly in relation to chronic conditions; the health impacts of socio-economic disadvantage and cultural and linguistic diversity and workforce challenges.
>
> **Interviewee C**

Innovation in service delivery and education of the public-sector workforce requires a multitude of stakeholders to re-imagine their roles and responsibilities together. By integrating individual and sometimes competing priorities into a collective and overarching goal, equity of access and quality HSD can be provided by a high-quality workforce, across the health system.

Most participants felt that there is a pressing requirement to identify and develop capable individuals, from across the whole GDH, who not only have the attributes required but have also the service-orientated attitude in both the clinical and managerial leadership. The most important aspect of educating, training and developing the next generation workforce is to be future-oriented. Currently employees are trained to overcome current problems. Above and beyond the clinical components of a HSD, the tools and skills of the innovation process should be transferred to all employees. This will ensure employees become, not only future healthcare service providers and managers but also innovators with the ability to imagine a radically different HS.

The above-mentioned sentiment was captured by the statement:

> If the GDH really means business it will have to invest significantly in the training and development agenda. The current approach to identifying and nurturing talent for the future in the GDH was ‘confused and not joined up, with everyone doing their own thing and with no strategy to retain more experience talented workforce.

**Interviewee Z**

And that:

> The natural attrition and retirement of civil servants and frequent resignations and transfer of knowledge workers across government departments create new challenges for retention of knowledge and preservation of institutional memory, hence the need for the continuous training of existing and inexperienced staff.
>
> **Interviewee Z**

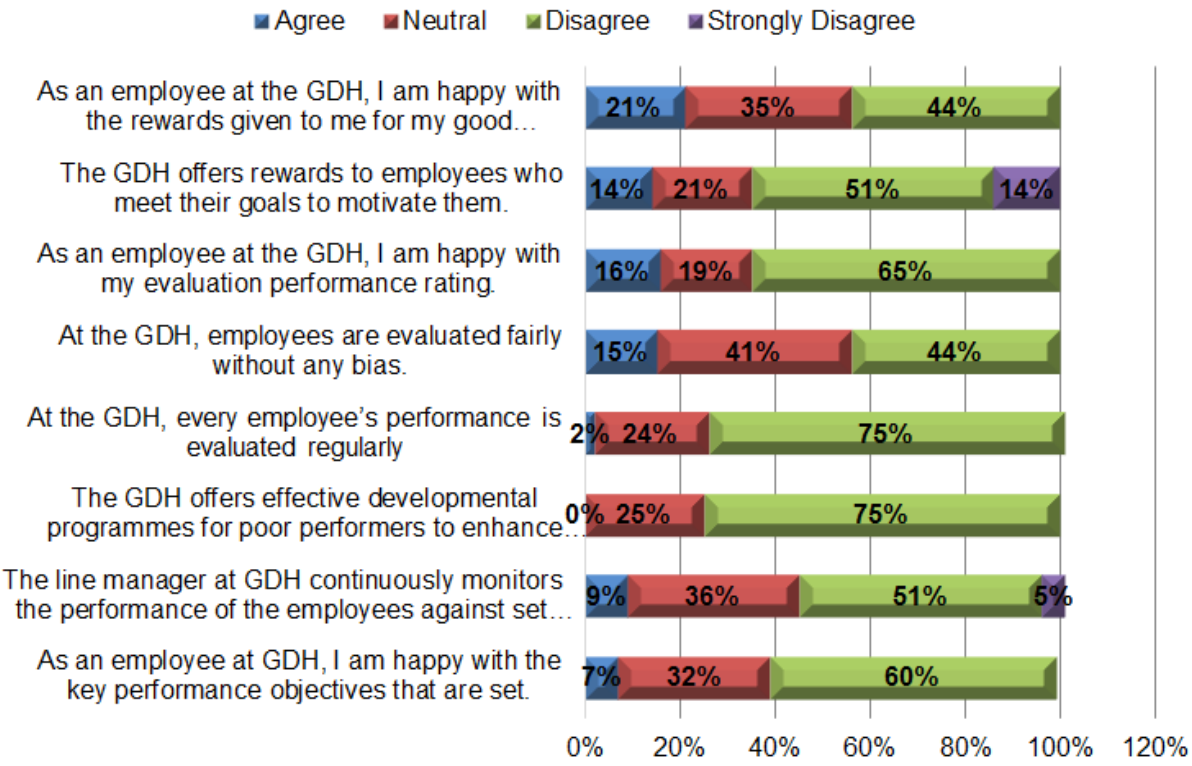



Figure 50: Employee Objectives and Performance

However, the findings (Figure 50) revealed that some of the survey respondents in the survey accorded employee commitment a very low rating (27 - 6%), others (234 - 52%) rated it low, while still others (187 - 42 %%) rated it moderate. In addition, 135 (30%) survey respondents rated job satisfaction as very low and 238 (53%) rated it as low, while 75 (17%) gave it a moderate rating.

Another 197 (44%) survey respondents rated employee retention as a low and 170 (38%) rated it as moderate, while 81 (18%) gave it a high rating. All assessments in areas of employee retention, job satisfaction and employee commitment received low to very low ratings. This shows that even while employees were less committed to their work, neither had the department done much to ensure that they were satisfied. In addition, even while employees were less committed to their work, the GDH had not done much to ensure that they were satisfied to influence performance and HSD positively.

Further findings from the study revealed that employees were generally not happy with the key performance objectives that were set, 271 (60%) disagreed, 146 (32%) did not express any opinion and 31 (7%) agreed. They were equally unhappy with the performance evaluation ratings, 291 (65%) disagreed, 86 (19%) were non-committal and 71 (16%) agreed. They were also unhappy with the rewards given to them for good performance, with 197 (44%) disagreeing and 156 (35%) remaining neutral, while 92 (21%) agreed. Of the survey respondents, 230 (51%) also disagreed that the GDH offered rewards to employees who met their goals to motivate them, 95 (21%) gave no opinion while 60 (13.4%) agreed.

This despondency was fuelled by the fact that 334 (75%) disagreed that at the GDH, every employee's performance was evaluated regularly; 106 (24%) gave no opinion, while only 8 (2%) agreed and 197 (44%) survey respondents disagreed that employees were evaluated fairly and without bias, 182 (41%) were non-committal and 69 (15%) agreed. Further, 229 (51%) disagreed that the line managers continuously monitored the performance of employees against targets, 20 (5%) strongly disagreed, 161 (36%) did not give an opinion and 38 (8.5%) agreed. In the end, the greatest unhappiness was expressed by the 337 (75%) survey respondents who disagreed that the GDH offered an effective development program for poor performers to enhance their performance at work and 111 (28%) who did not give an opinion, while there was not a single agreement. The situation was not improved by a sizeable number of survey respondents remaining neutral in all the categories of performance management.

Zaied *et al.* (2012) noted also that a learning organisation is an organisation that enables the learning of its employees in such a way that it creates positive outcomes, such as innovation, efficiency, improved alignment with the environment and competitive advantage through training, workshops and seminars. In this way, employees learn and acquire new skills and knowledge and the members are transformed.

#### 5.6.3.3. Long-term orientation

Marler and Fisher (2013) asserted that in an "organisation characterised by here-and-now attitude to employment relations, it is hard to think of creating communities or hubs of voluntary co-operation". He went on to state that "time horizon is a critical element in people management". An organisation with a short-term focus regards HR as a cost centre and demands quick return on investment, whereas an organisation with a long-term focus regards HR as an investment to be reaped over time (Lin, Tsai, Tarn & Hsu, 2014; Chen & Huang, 2009). This long-term orientation and commitment is far more important than short-term gain. And this long-term commitment is extended to all stakeholders of the organisation including employees and customers.

Since knowledge resides in individuals who have the discretion to use and share it as and when they want, their HR philosophy has not altered enough to generate the trust and openness necessary to persuade knowledge employees to share their knowledge (Grindle, 2013). Therefore, organisations have to create a HR that builds loyalty and commitment within employees as well as restores people to the heart of organisation (Du Plessis & Sukumaran, 2015; Mannie *et al.,* 2013).

The organisation should create and maintain good and long-term relationships with its employees by engaging employees broadly, being generous to its employees and creating mutual, beneficial opportunities and win-win relationships with its employees. The organisation also grows through an empowered workforce thereby turning the organisation into a high-performance organisation. Leadership is equally committed to the organisation for the long haul by balancing common purpose with self-interest and teaching employees to put the needs of the organisation as a whole first. The long-

term orientation will also take into consideration growing new management from its own ranks by encouraging employees to become leaders, filling positions with internal talent and promoting from within. Thus, creating a safe and secure workplace by giving employees a sense of safety (physical and mental) and job security.

#### 5.6.3.4. Continuous improvement

Today's fast-transforming, fast-paced and competitive knowledge economy is forcing change upon organisations (Mills & Smith, 2011). This is impacting more in the public-sector. Several interviewees remarked that there has been in the last several years, increased criticism regarding the poor quality of HSD in South Africa. They mentioned that inferior quality of HSD is in part the result of staff shortage, costly modern technology, an increase in demand for healthcare and complex healthcare regulations.

This was also highlighted by one of the interview participant who remarked that:

> There are so many changes in the healthcare regulations, healthcare related acts of parliament and policies due to the public-sector reform initiatives, such that it is difficult for any one individual to keep up without consulting with others regularly.
> **Interviewee AA**

In response to calls for the improvement in HSD there has been an increasing focus on the development of long-term service delivery plans (Schaay *et al.,* 2011) for the transformation of the process of achieving continuous improvement of HR management and service delivery processes. The on-going improvement of OP and service delivery processes plays a critical role in a total quality management. The rate of transformation in the public-sector means that employees have to function in constant disorder, uncertainty and ambiguity (Matsoso & Fryatt, 2013). These changes have introduced new and complex challenges that require employees to master new roles and responsibilities (Handzic & Durmic, 2015). They have heightened the awareness among leadership to adapt and implement new behaviours and ways of

doing things in an effort to improve on the quality of service delivery and OP (Handzic & Durmic, 2015).

The traditional HR and service delivery praxis are less effective in the environment that requires innovation and flexibility. Therefore, employees need to acquire new knowledge and skills to adapt to the emerging needs for improvement in OP. Management support has been documented to be important in a variety of operations management settings and it is an important construct underlying successful continuous improvement in employee involvement and innovation.

Therefore, improving the organisation's ability to deliver high-quality healthcare services is the objective of continuously improving initiatives and mechanisms. Employees feel a moral obligation to continuously strive for the best results. The organisation constantly creates new sources of competitive advantage by continuing to innovate new services delivery processes to respond to market changes. The organisation also needs to master its core competencies and become an innovator in them by deciding and sticking to what the organisation does best. It needs to keep core competencies inside the organisation and outsource non-core competencies

#### 5.6.3.5. Openness and action orientation

In recent times, organisations are searching for the elements that constitute continuous improvement, total quality management and improved OP and success. Managers are implementing different improvement concepts, often with mixed results. Open- and action-orientated culture in the organisation is identified as a key characteristic not only to create openness but also to take dedicated action to achieve results. Management values the opinion of employees by frequently engaging in a dialogue with them and by involving them in all-important business and organisational processes.

The findings of the study revealed that this issue is still a challenge at the GDH (Figure 51) in that 168 (38%) of survey respondents, agreed that the strategic goals of the GDH had been explained to them. Only 55 (12%) disagreed that the strategic goals

had been explained to them, while a substantial number of the survey respondents (225 50%) gave an ambivalent response. This implied that many survey respondents were uncertain of the department's strategic goals.

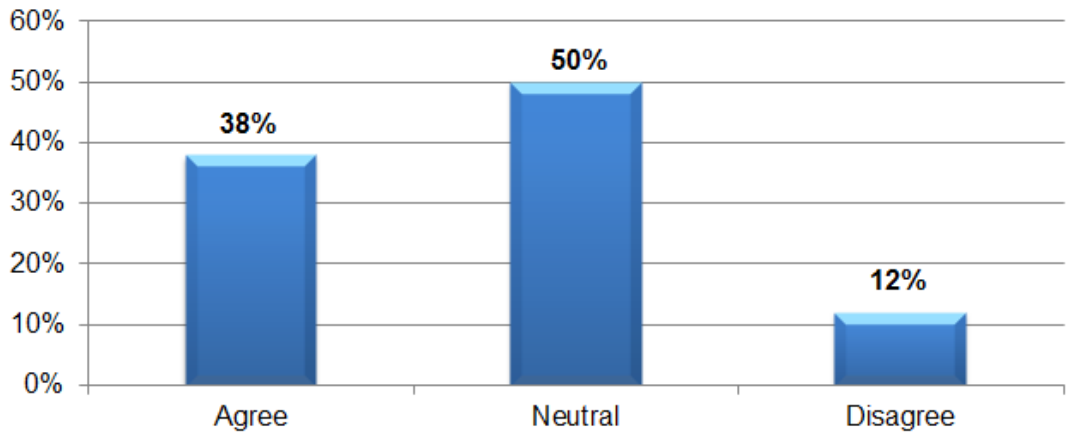



Figure 51: Strategic goals of the GDH are explained to employees

De Waal and Sivro (2012: 4) pointed out that for openness and action orientation to take place, "management allows experiments and mistakes by permitting employees to take risks, being willing to take risks themselves and seeing mistakes as an opportunity to learn. In this respect, management welcomes and stimulates change by continuously striving for renewal, developing dynamic managerial capabilities to enhance flexibility and being personally involved in change activities".

This is equally a challenge for the GDH in that the study findings showed that there was a huge number of survey respondents 383 (86%) who indicated that they were not willing to accept responsibility when departmental tasks were not well executed and 334 (93.6%) survey respondents were not willing to take responsibility mainly because of the perception that they did not have access to sufficient and relevant knowledge, particularly in the shared knowledge repository, to be able to execute their tasks. The employees at the GDH openly displayed reluctance to share mistakes or take accountability for poor performance. This was mainly because of low tolerance of reasonable mistakes and lack of trust between individuals and groups. Employees in an organisation that has a culture of openness and action orientation spend much time on communication, knowledge exchange and learning in order to obtain new ideas to

do their work better and make the complete organisation performance-driven (De Waal and Sivro, 2012).

The study revealed that there were indications of many challenges within the GDH. The urgency to share knowledge, lack of openness and open-mindedness among employees, lack of trust, bureaucratic processes within the organisation for sharing information, general unawareness of colleagues' knowledge needs and lack of a proper IT platform were highlighted as the main hindrances of an openness culture to information sharing in the department. The existence of such barriers is exerting a negative influence on openness and action orientation sharing practices (Lilleoere & Hansen, 2011).

### 5.6.4. Healthcare Service Delivery

In this dimension, three themes were identified: people, knowledge and information communication. See Figure 52.

#### 5.6.4.1. People

The healthcare service industry requires highly-skilled and efficient manpower. The health professionals are at the front line for delivering healthcare services. Along with perception, personality, attitudes and learning, motivation of people in the healthcare industry is a very important element of behaviour. Motivation is a basic psychological process. A recent study concluded that competitiveness problems appear to be largely motivational in nature (Balkyte & Tvaronavičiene, 2010). The optimum performance of employees is determined by their levels of job satisfaction. Thus, employees' levels of job satisfaction may impact significantly on their personal, social and work lives and as such, also influence their levels of productivity at work (Sehgal, 2012). There are various factors for job satisfaction, namely, job security, growth & development, promotion opportunities, working conditions, recognition of performance, rewards and recognition, position and status and decision-making opportunity.

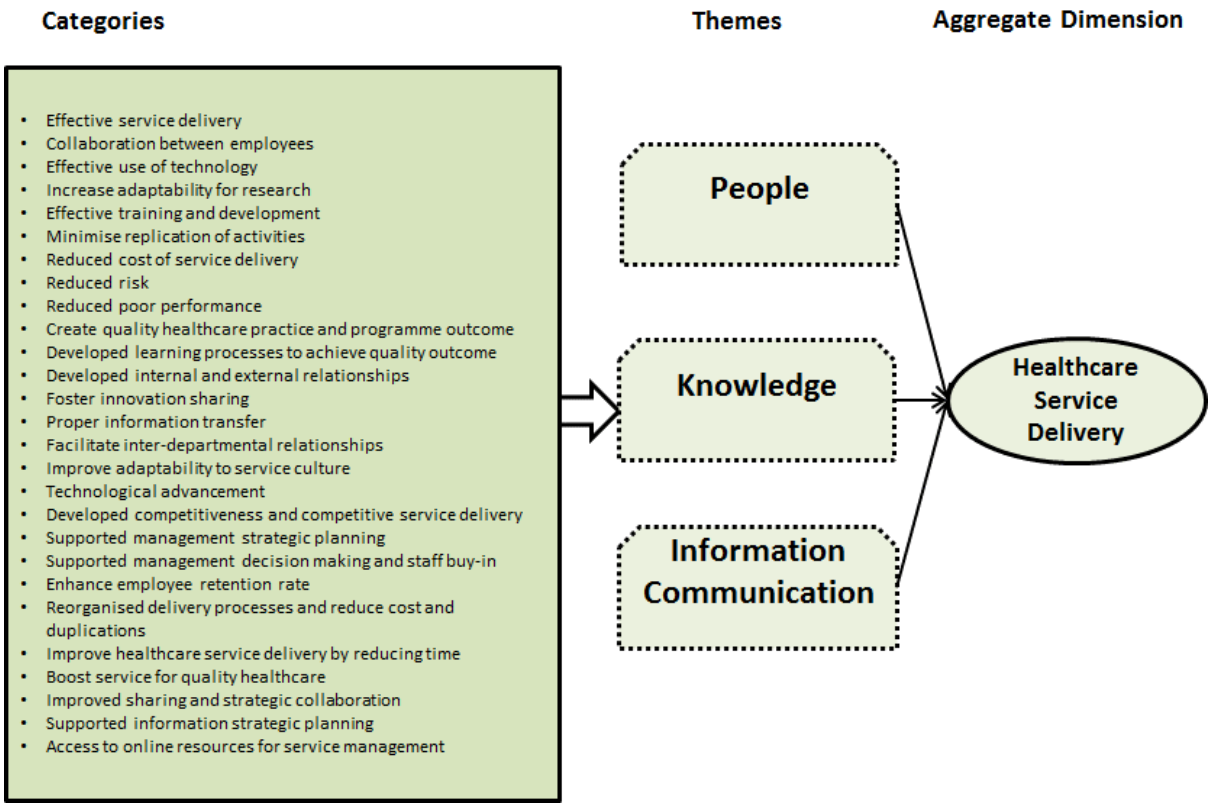



Figure 52: Healthcare service – data structure

Therefore, to maintain high-level of HSD, the organisation must have a strategy that puts a lot of emphasis on the people who deliver healthcare service. This is effectively the strategy to retain and maintain a satisfied workforce in a long-term relationship. The success of such a strategy can assist an organisation to improve their OP and HSD. There are several key success factors that successfully support people strategy, namely the integration of people, technology and process and these are senior management, OC, information technology, customer involvement and evolutionary path (Table 93).

The healthcare service organisation does not have to spend high resources of the organisation in order to improve quality. The organisation can improve quality of healthcare service without using high resources. The organisation needs to have a HRM strategy and understand what the employees' needs are and put customers in the first place.

Table 93: Key Success Factors for People Strategy

| | |
|---|---|
| Senior Management | Commitment from senior management is really important in implementing and driving people strategy. It is said as a key factor that contributes to the success of people management. |
| OC | OC is created from beliefs, expectations, attitudes and common value of all the members involved in organisation. It always changes as the time passed. |
| Information Technology | Organisation's technology capability plays an important part. People interaction strategy cannot be implemented without proper support from information systems. |
| Customer Involvement | Understanding this behaviour of patients can assist the healthcare service providers and employees to treat patients with more care and cautious. |
| Evolutionary Path | Evolutionary path and continuous evaluation of people strategy has been viewed as one of the success factor in people management and requires a few steps and process before can be successfully implemented. |

Equally important, the healthcare organisations need to ensure that their employees are satisfied with the environment and circumstances of the healthcare workplace. This is because employees' satisfaction has been viewed as a key for the organisation to consider in improving the quality of HSD and customer satisfaction. Employees' satisfaction is important as employees are the ones who provide the service and treatment. In addition, positive and motivated employees assist the organisation to enhance their quality improvement and OP. Therefore, a comfortable and positive workplace, effective use of technology, training and development, access to information, among others, are needed for the employees to deliver a sound service to patients.

#### 5.6.4.2. Knowledge

The knowledge of delivering healthcare services is the processes through which the providers collaboratively engage with customers to create the quality of service. The emergence of service-dominant logic has highlighted the concept as an appropriate mechanism of quality service. Therefore, quality service is always uniquely and phenomenologically determined by the beneficiary (Davies & Mannion, 2013). Grönroos and Voima (2013) are however of the view that its creation is influenced by the processes of the service encounter between the employees and patients. Hence, effective knowledge in the encounter may lead to quality service delivery. Whereas ineffective integration of employees' resources and knowledge could lead to quality service destruction Grönroos and Voima (2013).

Chakraborty, Bhattacharya & Dobrzykowski (2014) is of the opinion that healthcare quality service is centred on what the customer does, whereas quality service takes into perspective the processes within the network. It can be argued that the employee's continuous participation in the quality service delivery process is largely influenced by their experiences and knowledge, both past and present. These experiences could be at the cognitive and subconscious level leading to knowledge growth through interactive processes Chakraborty *et al.* (2014) and are influenced by the social context within which the encounter takes place.

Therefore, knowledge of the quality of service perceptions of the employees provides the basis of understanding the quality of HSD. The following three main elements constitute the social context that impact on HSD: the employees' social skills (interpersonal skills, friendliness, empathy and respect for the patient), the level of interactions between the employee and customers and their knowledge and competences. The behaviours and attitudes of employees are mostly driven by their beliefs and perceptions, which also influence the quality of healthcare services delivered.

Osei-Frimpong, Wilson & Owusu-Frimpong (2015) posits that quality in HSD is primarily self-orientated, that it is driven by the employee's and the patient's

experiences, emotions and functional attributes. Hence, quality of service in healthcare should be conceptualised from the experiential perspective that requires active collaborative behaviours of the employee and the patient. It is therefore evident that the value of the quality HSD process is fuelled by the knowledge and experiences of the employees. HSD is considered a knowledge-intensive service whereby the level of the employees' expertise (i.e. that of a doctor) outweighs that of the patient (Osei-Frimpong *et al.,* 2015). Hence, knowledge is considered one of the fundamental resources of HSD.

#### 5.6.4.3. Information communication

According to a general comment by all interviewees, the GDH has to use its knowledge assets effectively to improve OP and HSD. Having a well-defined KM policy was suggested as an urgent intervention required by the department to create and access the right information and knowledge for the delivery of a quality healthcare service.

The interviewees also remarked that the GDH should define an organisational policy for KM. To achieve improvement in OP and HSD, such an organisational policy on a KM strategy should attempt to associate the HSD strategy with the knowledge creation process (Brennan *et al.,* 2016). They also agreed that the effective flow and application of knowledge through the knowledge-sharing process could lead to improved HSD.

Therefore, for the creation of value (Mills & Smith, 2011), the GDH would need to apply knowledge to HSD efforts by various means, such as efficient, productive, innovative and quality processes, repackaging available knowledge and training and motivating staff to think creatively and improving employees' understanding of the department's processes and healthcare services.

Value creation for HSD at the GDH was however not evident in the study's survey. 42% (n=198) of survey respondents rated the current service delivery abilities of the GDH as poor and 36% (n=161) did not express an opinion. The HSD abilities and the level of OP of the GDH have degenerated with the implementation of the public-sector reform. This is demonstrated by only 22% (n=99) of survey respondents in the study's

survey who rated the GDH's HSD as poor prior to 1994, compared to 42% (n=198) survey respondents who rated it as poor after the 1994 public-sector reforms. In the study's survey a 20% drop in the quality of HSD was shown.

## 5.7. Organisational document analysis

To determine the need for KM practices at the GDH, the researcher had to perform a systematic review and evaluation of the organisational documents – both printed and electronic (computer-based and intranet-transmitted) in existence at the GDH. This required that data be examined and interpreted in order to elicit meaning, gain understanding and develop empirical knowledge (Yoo, 2014) and expose the disparities so as to find a solution that would best match the working environment of the GDH.

For the purpose of this study, other traces of documentary evidence, such as cultural artefacts, advertisements, agendas, attendance registers, diaries, brochures, event programs, letters and memoranda, maps, charts, press releases, program proposals, application forms, radios, television program strips and various public records, were excluded.

The organisational documents studied included the national healthcare policies, national healthcare regulations, acts of parliament on healthcare, GDH organisational strategies and operational plans, GDH annual reports, GDH and DoH archives for the detailed background of the HS in South Africa as well as HS operations by the GDH.

### 5.7.1. Knowledge creation/acquisition

According to the organisational documents and in order to acquire as much understanding as possible of the healthcare policies and national healthcare project, staff members at the GDH were regularly exposed to workshops, seminars and conferences. They were also sent on regular training and exposed to the broader healthcare policies of government and the departmental strategic and operational plans.

To underline the need for a knowledgeable workforce to deal with public-sector reform in South Africa, the GDH in its ICT development strategy acknowledged that South Africa was aspiring to be a developmental state. In order to achieve this, it needed to increase its capacity to innovate so as to participate fully in the global knowledge economy.

The HRM within the GDH went through a fundamental change in order to actualise the knowledge creation management principles by introducing the following policies:

- Increased delegation of managerial responsibility and authority to the provincial departments and the delegation of day-to-day management decisions to line managers.
- Developed a service delivery-orientated, multi-skilled and multi-cultural workforce.
- Continued a drive for service delivery, efficiency and effectiveness.
- Created a flexible environment that takes into account both the operational needs of the organisation and the needs of the employees operating in a knowledge economy.

The ICT strategy document acknowledged that a major catalyst of the knowledge economy was ICT (Gauteng Provincial DoH, 2013).
It stated that:

> A fully-fledged knowledge economy in Gauteng wherein the information society harnesses the evolution of ICT and ensures that knowledge creation, sharing as well as information manipulation become the engine for economic growth and development.

From the GDH documents mentioned, it was quite clear that senior management at the GDH formally considered knowledge as a strategic asset for the department to improve performance and HSD. From the organisational documents, the department clearly set itself several objectives that supported the knowledge economy (GDH, 2014; GDH, 2013), namely:

- It was in the context of the knowledge economy that an ICT strategy was being put forward to assist in making the knowledge economy in Gauteng a reality.
- Innovation, research and development were encouraged to strengthen the knowledge economy.
- GDH sought to create an inclusive knowledge economy.
- An attempt was made to ensure that Gauteng citizens participate actively in the information society and the knowledge-based economy.
- Business intelligence and KM were identified as the top-ranked priorities, followed by application development and software as a service.
- In terms of service delivery, an attempt was made to facilitate more efficient and effective government and business processes.
- The focus was placed on the educational learning portal for literacy, numeracy and network support to encourage knowledge creation.

In the Annual Performance Plan 2010//13 (GDH, 2013), KM objectives were specified as follows:

- Establish the KM forum
- Strengthen the GDH and KM forum
- Provide a framework for systematic exploitation of departmental information and knowledge resources
- Make departmental information, knowledge, information systems and ICT work for the department
- Harmonise and integrate the management of different forms and repositories of departmental information and knowledge resources

The KM concept features very conspicuously in the GDH organisational strategies and operational philosophy and objectives. The message emphasised throughout the policy and strategy documents is that organisational knowledge creation is a priority for the global organisation to create new knowledge, disseminate it throughout the organisation and embody it in HSD and OP.

To this end, the organisational documents reveal that knowledge creation is a principle forming the basis of the KM activities in the GDH. Examples include the fact that some of the objectives are to enforce enabling conditions for knowledge creation, such as,

- Redundancy of information by improving its communication infrastructure
- Free-flow and sharing of information among employees and different departmental divisions groups
- Enhancing commitment to innovation and performance improvement

Faced with the challenge to transform the GDH to a knowledge-based organisation, the organisational documents regularly emphasised the strategic intent to exploit organisational knowledge creation as a means of breaking away from the past and moving the GDH into a new and transformed operational dispensation.

Two important areas that emerge very strongly in the organisational documents are that knowledge creation should be at the centre of the GDH's human resource strategy and that the information society, together with ICT, forms the basis of a knowledge economy. Such strategies will increasingly rely on the application of modern ICT, particularly those aspects of ICT related to KM, to enhance global competitiveness and increase OP and HSD in Gauteng.

Successful KM therefore continues to need a socio-technical approach where the social aspects of knowledge creation, storage, sharing and application have to be considered alongside the technical ones.

### 5.7.2. Knowledge-sharing/transfer

Knowledge-sharing as defined and discussed in Chapter Three of this research study was conceptualised in various ways.

Knowledge-sharing in the context of this study and how it was defined in the GDH organisational documents was the intentional transformation of data and information into knowledge that could be used and shared in the GDH. There was a clear

abundance of tools and mechanisms for facilitating knowledge-sharing and managing electronic information in the GDH. Various organisational documents of the GDH have sub-sections that deal with both information and knowledge that are shared externally (explicit), such as healthcare legislation, acts of parliament and policies, as well as knowledge held internally (tacit), that need to be shared to provide business and operational solutions.

ITC infrastructure and related facilities are in existence at the GDH for coded information in databases, the internet, intranet, departmental websites, DoH websites, government websites and other forms of electronically accessible documentation. Employees at the GDH have access to these technologies to a large extent and use them collaboratively to share their tacit knowledge by means of social interaction.

It was evident that the GDH encouraged information flow and use of modern technologies. However, from reading the organisational documents, very little evidence was found of detailed procedures to manage and enable the process of formal documentation in the GDH. The sharing of knowledge was entirely at the discretion of the individual. This observation was mentioned by one of the senior managers who was interviewed:

> Employees often will use the most readily available and convenient means to document their work. This documented work will most often reside on their desktops or laptops as they use diverse and informal documentation processes.
> **Interviewee D**

This was the cause of a significant challenge to make information accessible to all from a centralised repository. In itself it presented a serious challenge to the ability of all staff members to access the information they need to perform their tasks. This challenge seemed to be addressed in an organisational document, namely the ICT strategy document (Gauteng Provincial DoH, 2013) where factors that have a specific influence on knowledge-sharing are identified to be addressed, namely:

- OS;
- OC;
- Policies and procedures for managing knowledge;
- The perceived value of knowledge; and
- ITC media used for interaction.

In those documents, the GDH addressed the identified factors through processes and procedures that provided the capability for knowledge-sharing. The resources provided were the ones that enable electronic management of knowledge. For example, a central data repository, databases, internet and intranet, wikis and electronic mail were made available and the procedures were documented in steps that the staff must follow in order to add knowledge to the resources. This was an effort by the GDH to encourage the use of departmental resources for knowledge transfer/sharing.

The organisational documents raise the issues of OS and culture but there does not seem to be any particular understanding or enthusiasm among leaders to instil a knowledge-sharing culture, either through employee performance contracts or methods, such as the balanced score card.

Confirming what emerged from the interviews with executive managers and senior managers, the interviewees stated that leaders at the GDH do not seem to acknowledge that KM is a multi-faceted discipline that offers strategic advantages. This requires the GDH to be a learning organisation through the implementation of its knowledge-sharing and transfer strategies as outlined in organisational documents, necessitating a change in OC and knowledge-sharing and transfer interventions.

### 5.7.3. Knowledge retention/storage

The GDH, like all business organisations and government institutions and departments, depends on its employees' skills, knowledge and abilities for OP and efficient and effective delivery of healthcare services in order to stay abreast with changes. As highlighted in Chapter Two, the GDH like most organisations is also faced

with the problem of knowledge loss. Several attempts have been made to implement policies to retain both tacit and explicit knowledge.

The GDH organisational documents revealed that the GDH could be among the government departments that have no effective programs for preserving tacit knowledge when healthcare professionals and knowledge workers retire, resign, take a leave of absence, or are dismissed. An assessment of the GDH Operational Plan 2012/2015 documents (GDH, 2014; GDH, 2013), revealed the following operational problems:

- High staff turnover
- Inability to retain experienced and qualified staff (health professionals)
- Lack of effective information or KM
- Lack of succession planning
- Lack of performance management processes and
- Lack of sustained leadership

Although the GDH was very clear about moving towards the knowledge economy and the objectives that it had set itself, as well as the importance of knowledge retention, the organisational document clearly shows that little effort has been made by management to implement KM guidelines, policies, processes and procedures that will ensure knowledge retention for operational benefits.

Important observations that the researcher made were that workforce planning was not practised, there was a serious lack of skills and competency inventories, work processes were not documented, staff were not exposed to various business units and knowledge audits, job rotation, succession planning, coaching, CoP and mentorship were almost non-existent. These are considered in the KM literature as some of the key enablers of knowledge creation retention, transfer and storage (Dewah & Mutula, 2016; Deverell & Burnett, 2012).

The literature has acknowledged and indicated in many ways that people's heads have been and will always remain the natural repositories of knowledge (Kabir 2013;

Mohammad & Al Saiyd, 2012). However, people and organisations can forget, therefore developing an organisational knowledge storage mechanism becomes even more crucial for knowledge retention (Dewah & Mutula, 2016; Bessick & Naicker, 2013). The organisational documents pointed out the risks and organisational vulnerability, should employees leave or forget what they knew and learnt; a view supported by (Cegarra-Navarro & Sánchez-Polo, 2011).

The GDH organisational documents also mention the need to improve on the department's ICT infrastructure and mechanisms that will allow for speedy processing and storage of information. This would effectively enable employees' knowledge to be transferred into either a paper-based format or an information system so that everyone can continue to access that knowledge and analyse it long after that employee has left the organisation (Cegarra-Navarro & Sánchez-Polo, 2011).

The GDH organisational documents showed noticeable disparities in the availability of knowledge retention and storage practices at the GDH. Considering the value placed on the lack of essential knowledge retention practices, the GDH is indeed in need of a solution to help retain operational knowledge in order to improve on OP and HSD.

In addition, it was pointed out as crucial in the organisational documents that the GDH must recognise the importance of creating a centralised knowledge repository that would ensure that its employees' knowledge and experience are made widely accessible to colleagues. This required the investment of time and other resources into individuals to ensure that they are willing and able to analyse their own knowledge and make it available to others (Cegarra-Navarro & Sánchez-Polo, 2011). Generally, as there was no evidence of a skills inventory or records of succession planning, staff rotation, coaching and mentoring, the researcher found that there was a very limited knowledge retention culture and awareness in the GDH.

Equally crucial is the acknowledgement in the organisational documents of technology which is classified broadly as the technical systems within the GDH that determine how knowledge travels throughout the organisation and how knowledge is stored and accessed. It includes ICT and its capabilities, which contribute to KM effectiveness,

business intelligence technologies that enabled the department to generate knowledge about its external environment and knowledge application technologies that enable the department to use its existing knowledge.

The GDH ICT strategy (GDH, 2013; GDH, 2014) document has identified, rightfully so, that the improvement of science and technology and the techniques of the information system could be used to support and promote KM processes. Technology is recognised in the GDH as essentially an organisational capability for effective knowledge storage, retention and access. This observation is very much in line with the view that knowledge storage allows the organisation to have an 'organisational memory', which is the organisational internal knowledge accumulated over time (Cegarra-Navarro & Sánchez-Polo, 2011).

### 5.7.4. Knowledge application/use

The GDH requires a knowledge application process to integrate knowledge from different sources inside and outside the organisation to develop organisational capability and decision-making expertise in specific situations (Mills & Smith, 2011). It views KM application as a mechanism for the integration and application of existing knowledge to organisational activities and for facilitating problem-solving for the department (Zack *et al.,* 2009).

Based on improved OP and HSD, in view of their complexity, ambiguity and uniqueness to this department, knowledge application has specifically emerged as a component of KM, with great potential for the generation of sustainable competitive advantages for the GDH. Accordingly, the greater the availability of KM application practices for disseminating, integrating and applying organisational knowledge, the better the department's performance will be (Donate & Sanchez de Pablo, 2015).

The GDH operational plans referred to the use of information and knowledge as the practice of selectively applying knowledge from previous experiences of decision-making to current and future decision-making activities in a rapidly transforming environment. This is performed in order to achieve their objectives of encouraging the

department to operate effectively in the knowledge economy with the express purpose of improving its effectiveness.

The results that the GDH would like to achieve, according to one of the senior executives interviewed, are that:

> The success of our information and KM strategy is the department's ability to effectively utilise information and knowledge assets to affect OP and improve overall efficiency and effectiveness in HSD.
> **Interviewee AD**

The GDH is of the opinion that knowledge benefits are derived from the quality of the knowledge in the system and the service dimensions associated with the systems. They also think that the benefits are the result of the increased use of this knowledge and information for the performance of tasks by employees and decision-making by leadership.

The emphasis on technology for the application and use of knowledge in the GDH ICT strategy document is absolutely in line with the theoretical framework of knowledge application. As described in the previous paragraphs, the use and application of knowledge are indications of a successful KM strategy, so the organisation can only enjoy a competitive advantage when it is able to transform its knowledge into effective action (Donate & Sanchez de Pablo, 2015; Ryan *et al.,* 2012).

There is repeated emphasis on the use of technology to guarantee the effective application and use of information and knowledge in the organisation (Yusof *et al.,* 2012). This includes the form of workflow automation, the decision support system, data mining technology, business intelligence systems, enterprise resource planning systems and the deployment of knowledge systems and expert systems. The GDH supports the view that ICT provides support for knowledge application and the important role that the ICT OC plays in successful knowledge application in the department (Newell, 2015).

With the increasing popularity of organisational social networks, social media and the amount of organisational knowledge that is available with the use of IT (Newell, 2015; Yusof *et al.,* 2012), the GDH is better positioned to maximise the application of its knowledge throughout the organisation's hierarchy. What emerged from the analysis of the GDH organisational documents is that the use of information management for KM is a critical point of impact on HSD and patient safety.

Communication between all the stakeholders from healthcare management, the healthcare administrative staff and healthcare professionals is vital to the co-ordination of quality HSD. For this reason, the department has made it a business imperative to improve the information and KM and managerial decision-making (GDH, 2014; GDH, 2013).

They have identified three types of knowledge and information flow in the department and have emphasised the:

- Vertical knowledge flow, which refers to information communicated top-down and bottom-up in the departmental hierarchy
- Lateral knowledge transfer, which is information communicated across different areas on the same level within the department and
- Longitudinal knowledge, which is information which is continuously changing. This view was supported by (Crespo, Griffith & Lages, 2014) who argued that, through knowledge flows in organisational hierarchies and networks, the organisation can leverage knowledge within its network for competitive advantage.

### 5.8. Conceptual knowledge management capability framework

The thematic analysis in the sections above highlights the factors that affect OP and HSD. Based on the semi-structured interviews, the emergent OP and HSD conceptual framework (Figure 53) comprises two core themes: Knowledge infrastructure capability (Information technology, OS) and knowledge process capability (KM-A).

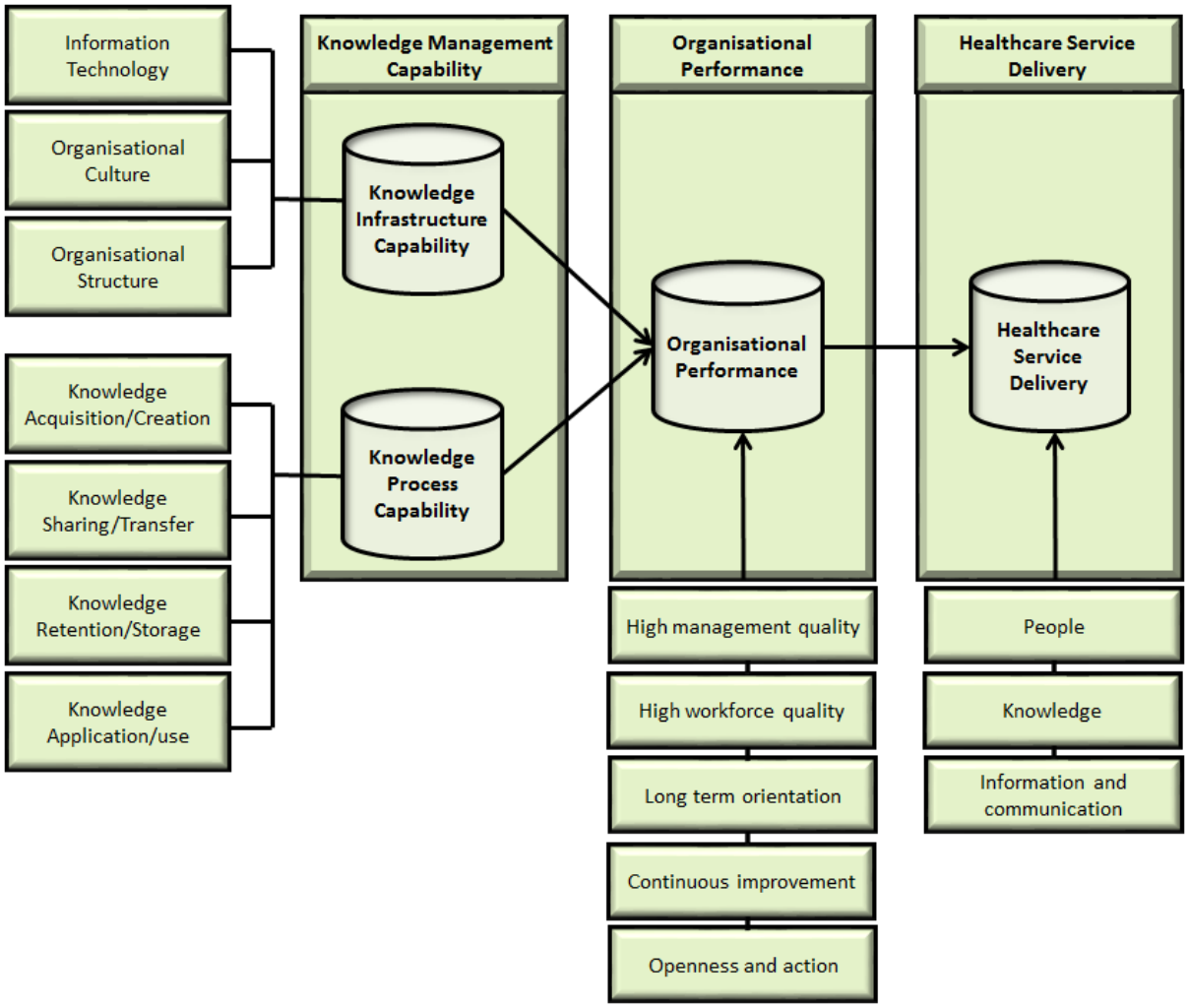



Figure 53: Conceptual KM capability framework

The first dimension is the Knowledge Infrastructure Capability. Participants discussed the importance of IT as an enabler for KM. They highlighted the importance of OC to facilitate knowledge-sharing and transfer. They emphasised the crucial role that the OC plays in public-sector organisations, as it cannot be isolated; the participants pointed to culture in different forms: organisational and information technology. OC plays an essential role in encouraging KM practices through organisational learning, team orientation, mission, consistency, incentives and performance appraisals. They remarked on the importance of the OS to ensure that there were no blockages to the flow of information.

The second dimension is Knowledge Process Capabilities, which is a key theme in creating or acquiring knowledge, sharing or transferring knowledge, retaining or storing knowledge and application or the use of knowledge. The participants

highlighted the necessity of securing, coding, updating, controlling, checking the accuracy, quality and source of the knowledge created or shared. They also discussed their willingness to share knowledge, as they believe that the relationship between senders and receivers, gaining and using knowledge, the perception of knowledge as power, trust and recognition inside the organisation are crucial factors that affect OP and HSD. Thus, Figure 53 was assembled on the conceptual framework of KM developed in Figure 13 and Figure 14 in Section 2.10.

The KM capability research framework defined KM capabilities as a multidimensional combination of knowledge infrastructure capabilities and knowledge process capabilities. It further developed the connection between KM capabilities and OP and HSD. The figure presents the conceptual framework of KM as a combination of both technical and human aspects which shows the interaction of the KM processes and organisational factors in improving OP for HSD. It also illustrates the impact of information technology, OC and OS on organisational effectiveness (Zheng *et al.,* 2010) on one hand and the impact of knowledge creation, sharing, storage and application on the organisation's abilities to integrate, build and reconfigure internal and external knowledge and competences (Zheng *et al.,* 2010) on the other.

Combining the knowledge infrastructure capability and knowledge process capability indicates a complementary relationship, which implies the synergistic effects of KM on OP (Choi *et al.,* 2010). Zheng *et al.* (2010) reported that both the knowledge infrastructure and knowledge process capabilities have to correspond with one another in order to impact positively on OP.

Finally, OP and HSD in the diagram show management quality, workforce quality, long term orientation, continuous improvement, openness and action, people, knowledge and information communication as interactive organisational capabilities support OP and HSD and enables the organisation to cope with unpredictable changes and thrive in a continually changing environment. They provide the organisation the agility and ability to mobilise and deploy critical knowledge resources and manage their assimilation and exploitation across functional boundaries, thereby enhancing OP and improve delivery of high quality healthcare services.

## 5.9. Data comparison and integration: Qualitative and quantitative results

The data in this study came from the survey, interviews and organisational documents. Therefore, the researcher needed to conduct a detailed data comparison and assessment. Data comparison is the process of comparing and contrasting qualitative and quantitative data/findings and highlights differences and similarities, whereas data integration represents qualitative and quantitative data/findings being integrated into a coherent whole (Guetterman, Fetters & Creswell, 2015; Creswell, 2014; Venkatesh *et al.,* 2013; Frels & Onwuegbuzie, 2013). The data has to be combined into one integrated and coherent whole if meaningful interpretations are to be made and in order to provide answers to the research questions (Creswell, 2014).

As the qualitative and quantitative data was analysed, the compelling story of the qualitative data became prominent in the data comparison phase. Descriptive statistical results complemented the qualitative findings to generate a picture of GDH KM practices and strategies or lack thereof. After data comparison, the researcher integrated data to address the research questions and to enhance the depth and clarity of research findings.

While quantitative data analysis was based on representative numbers/quantities, qualitative data did not seek to choose samples representative of the GDH and its related healthcare entities and hospital employee categories. It was based rather on the quality of the data collected. This combination of approaches was necessary because of the wide range of data needed to discover and develop suggestions for KM practices in the context of the GDH. However, the potential for problems always existed when attempting to combine these divergent research paradigms. For example, it could have been possible to end up not doing either type of research well, especially as this was the effort of a single individual (Ozawa & Pongpirul, 2014; Graff, 2014).

The current GDH OP and HSD needed value improvement and suggestions on what KM practices would be necessary to address the situation before investigating what

was necessary to bridge the gap. Thus, the researcher examined the gap between current practical knowledge of the problems and currently available solutions.

Findings from the survey, interview and documentary data suggest that GDH executive managers, senior managers, middle managers, medical professionals and the general staff had varied understandings of the meaning of KM, with 398 (88.8%) of survey respondents agreeing that knowledge depends on information and 336 (75%) disagreeing that KM includes information management. Most of the interview participants 390 (87%) did not seem to have an understanding of the distinction, as they agreed that knowledge and information mean the same thing.

In the organisational documents that were read, the concept of KM was well documented and clearly identified as a business imperative in which the GDH sought to create a learning organisation that would function effectively in the transformed public-sector and an inclusive knowledge economy. The GDH in its strategies and operational plans understood that the mere implementation of technology is not sufficient for the implementation of KM in the knowledge economy. It therefore recognised that the key to increasing overall effectiveness and competitive advantage is effective knowledge resource management (Ryan *et al.,* 2012).

Nonetheless, the GDH also appeared to have disparities in managing knowledge and that had an impact on access to knowledge from a central knowledge repository. The survey respondents mentioned that the information they needed to perform their work was located in different places and this had a negative impact on the department's ability to improve its OP and to deliver quality healthcare services. For example, at the GDH, there does not seem to be one central place where one could access knowledge.

Ryan *et al.* (2012) pointed out that where the best knowledge was not accessible at the right time, or in the right format or place, costly mistakes resulted. This view is supported by the study findings, as 235 (52%) of the survey respondents maintained that the knowledge that they needed was located in paper-based documents and a further 213 (48%) strongly agreed with this view. This view was also supported by 179

(40%) survey respondents who supposed that knowledge was located in the heads of colleagues. Another 209 (47%) of the survey respondents concurred that the knowledge they needed to do their work was stored on computers in the department.

There were very few non-committal and disagreement responses, as reflected in the responses to the three categories, namely 1) knowledge that they needed was located in paper-based documents, 2) knowledge was located in the heads of colleagues and 3) knowledge they needed to do their work was stored on computers in the department. This left the researcher with the conviction that there were indeed serious KM gaps in the system.

This exposed the disconnection between the GDH written KM strategies, operational plans and objectives and consequent gaps in managing knowledge that hampers the department's ability to improve its OP and to deliver quality healthcare services. However, the explanation may be that survey respondents could have given more definite responses if the GDH had offered a detailed explanation of the impact that different enablers have on the successful implementation of KM and how the effectiveness of KM could improve OP and HSD (AL-Hakim & Hassan, 2014; North & Kumta, 2014).

This would be consistent with the findings from the study of Gaffoor & Cloete (2010) on KM enablers in a knowledge-based organisation and the recent study by Oztekin, Delen, Zaim, Turkyilmaz and Zaim *et al.* (2015), Haigh (2015) and Amir and Parvar (2014) on KM and financial and non-financial performance OP.

KM policy and KM practices on knowledge-sharing/transfer at the GDH seemed vague or non-existent, as described by some interviewees and by 387 (86%) survey respondents who felt that there were no proper organisational guidelines on sharing of information. Meanwhile 410 (92%) believed that there was too much bureaucracy that prohibited information sharing, 269 (60%) viewed lack of a proper IT platform to share information as a problem, 337 (75%) indicated that they did not know about other people's knowledge needs and 307 (69%) believed that there was lack of trust of other employees' knowledge.

The literature has revealed that the main purpose of knowledge retention/storage activities is to identify and store organisational knowledge, which is widely referred to as organisational memory (Sook-Ling *et al.,* 2015; Mårtensson, 2013). Evans *et al.* (2015) classifies organisational memory into knowledge stores of individuals, culture, transformations, structures, ecology and external archives. It is therefore suggested that knowledge retention augments organisational memory and helps to prevent knowledge loss. The findings of the study indicate that the GDH organisational documents show noticeable disparities in the availability of knowledge retention and storage practices at the GDH.

Considering the value placed on lack of essential knowledge retention practices, the GDH urgently needs a solution to help retain operational knowledge in order to improve OP and HSD. The study findings also revealed that interviewees noted the lack of a knowledge retention policy in the GDH. These findings are supported by 197 (44%) of the survey respondents who rated employee retention as low, while 170 (38%) rated it as moderate. All assessments in areas of employee retention, namely job satisfaction and employee commitment, received low to very low ratings.

The interviewees stated that people left the organisation for various reasons and there was therefore a requirement for the GDH to develop an organisational memory and to implement knowledge retention/storage policies as a crucial element of KM. This is in line with the view of Sook-Ling *et al.* (2015) that in reality, knowledge creation/acquisition, knowledge-sharing/transfer, knowledge retention/storage and knowledge application/use should be integrated into the organisation's KM strategy and should be implemented well before a key employee is about to depart

The ICT infrastructure that is available for the creation, sharing, retaining and storing of knowledge in the GDH includes central data repositories, e-mail, intranet, internet, portals, electronic notice boards, accounting and financial systems and HRM systems. These are modern technologies that have the potential to enhance the environment for KM (Yusof *et al.,* 2012).

Technology is necessary to serve as the enabler of KM. This view is supported by the findings of the study, as 166 (37%) survey respondents stated that the practice of KM was enhanced by the internet. On the other hand, 101 (23%) survey respondents mentioned e-mail, 91 (20%) mentioned information systems and 90 (20%) mentioned the intranet as playing a role in enhancing the environment for KM practices. Another 139 (31%) mentioned that knowledge was also shared using technology mediums such as e-mail, internet and information systems.

In line with the summary, Table 94 demonstrates the integration and comparison of findings through transforming all results into verbal descriptions. Some results were similar but others were not and that reinforced the suggestion by Onwuegbuzie *et al.* (2010) and other scholars cited in Chapter Three, that the use of mixed-methods, using both qualitative and quantitative approaches, will provide better understanding of the phenomenon of interest.

Table 94: Integration and comparison of the results through data transformation

| Key Themes | Presentation of outcomes across instruments | |
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| | **Questionnaire (Quantitative analysis)** | **Interview and Organisational Documents (Qualitative analysis)** |
| Level of understanding of KM (meaning of knowledge) | Executive managers reflected a fair understanding of what knowledge was.<br>The general staff members were using knowledge and information interchangeably and the same applied to KM and information management. | • Interviewees all understood the meaning of knowledge and KM,<br>• Organisational documents reflected extensively on KM,<br>• KM was viewed as a key principle and a business imperative,<br>• The GDH incorporates KM in its strategies and operational plan. |
| Knowledge transfer/shared between colleagues within the same department and knowledge transfer between departments | High percentage of knowledge shared between colleagues and across departments. Prefer to share in an informal setting.<br>The potential for sharing was reflected if an enabling culture and environment was in place. | • High response on knowledge transfer. A substantial part is kept to themselves and in informal setting (environment), which is preferred for collaboration and sharing.<br>• Interviewees confirmed that there was the potential for sharing knowledge but on condition of an enabling culture being in place. |

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| | However, the organisation did not provide staff with the necessary environment to allow sharing of knowledge and information.<br>The culture of knowledge-sharing needed to be developed and worked on.<br>The need for a central knowledge repository was mentioned.<br>High response for knowledge transfer and sharing between departments through meetings, e-mail, electronic notice boards, the internet and intranet as the technological mechanisms used most often for extensive knowledge-sharing.<br>• Mentoring, personal contact, minutes of meetings, circulars, memoranda and files, job rotation, job transfer enhance knowledge. Files and personal contact are used most often. Effective mentoring, job rotation, job transfer, performance | • The need for a central knowledge repository was mentioned as essential.<br>• Organisational documents are retrievable mainly from the GDH intranet, government website and DoH website.<br>• Ineffective ICT was limiting knowledge retrieval and transfer.<br>• Transfer between departments takes place through personal contact with staff who have knowledge, mostly executive and senior managers.<br>• ICT infrastructure exists.<br>• ICT infrastructure and related facilities are available at the GDH for coded information in databases, the internet, intranet, departmental websites, DoH websites, government websites and other forms of electronically accessible documentation. |

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| | management and coaching encourage knowledge-sharing.<br>• Staff meetings are held regularly but are rarely interactive. | |
| Knowledge creation/acquisition | • An organisational document suggested that communication and interaction in teams constituted the knowledge creation process, which referred to the development of new knowledge from data, information or prior knowledge.<br>• All departments were generating knowledge all the time.<br>• Departments failed to monitor and organise such knowledge systematically. | • Occurred mainly through files. Stringent rules on access. Most have to apply to the boss before access can be authorised.<br>• Minutes kept mostly in managers' offices. Authorised staff denied access.<br>• All interviewees were generating knowledge all the time but it was not systematically monitored or organised for re-use by colleagues.<br>• Getting hold of and accessing institutional documents was not always easy and straightforward.<br>• The GDH went through a fundamental change in order to actualise the knowledge creation management principles.<br>• Process harnesses the evolution of ICT and ensures that knowledge creation, sharing and |

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| | | information manipulation become the engine for economic growth and development.<br>• The focus was placed on the educational learning portal for literacy, numeracy and network support to encourage knowledge creation. |
| Knowledge retention/storage | • Personal computers, desktops and files in cabinets.<br>• There was a need for a comprehensive knowledge retention strategy, which should be woven into the fabric of the department as a matter of urgency.<br>• One of the primary vehicles that the department could use to identify, capture and transfer knowledge is a CoP.<br>• There is a need to create a central knowledge or information database or repository where all departmental strategy documents, operating plans, healthcare policies and regulations could | • Colleagues, books, documents and information systems, personal computers, desktops, GDH website and intranet were acknowledged in interviews as sources of knowledge.<br>• Technology was recognised in the GDH as essentially an organisational capability for effective knowledge storage, retention and access.<br>• The organisational documents used proved to be valuable sources of data, demonstrating the importance of retaining and organising documents.<br>• Most of the survey respondents agreed that knowledge retention was often only referred to in the context of losing key employees and |

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| | be kept as soft copies organised in areas of specialisation.<br>• Senior or more experienced staff members should be encouraged to transfer knowledge to new and younger staff members.<br>• Conditions of service and employment have to be improved through adequate support and motivation, job rotation, job promotion, reward and recognition, performance appraisals and improvement and a generally improved work environment.<br>• It is necessary to implement rewards and incentives for better performance and knowledge-sharing. | using techniques such as exit interviews in an attempt to capture their knowledge.<br>• A knowledge retention strategy should identify the knowledge resources that are at risk and must be retained and then implement specific initiatives to keep these resources in the organisation.<br>• Knowledge becomes manageable and reusable only if it is recorded and made available. However, participants noted the lack of a knowledge retention policy in the GDH.<br>• Interviewees stated that the loss of knowledge at the GDH was a result of several factors, including high staff turnover, inability to retain experienced and qualified staff, lack of KM programs, lack of succession planning and ineffective information management.<br>• There was a very limited knowledge retention culture and awareness in the GDH, as there was no evidence of a skills inventory or |

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| | | records of succession planning, staff rotation, coaching and mentoring. |
| Knowledge application/usage | • Survey respondents generally believe that they did not participate in improving KM services at the GDH, as they did not seem to see the value of KM services; they saw these services as not effecting any improvement in their performance.<br>• Survey respondents believe that the creation of knowledge that is applied effectively and efficiently will create a competitive advantage for the GDH. | • A view expressed in the interviews was that knowledge use or application refers to taking stored and shared knowledge, internalising it within one's perspective and worldviews and putting it to good use. It would seem to be an important principle of KM in enhancing the organisational knowledge application process, which will lead to organisational value when it is used to ensure effective performance.<br>• Interviewees regarded knowledge application as a mechanism to provide a solution and help the GDH to accomplish this goal by encouraging all staff members to share and apply their knowledge.<br>• Interviewees emphasised collaboration and teamwork and indicated that knowledge application was about making knowledge more active and relevant for the department in creating value. |

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| | | • The GDH requires a knowledge application process to integrate knowledge from different sources within and outside the organisation to develop organisational capability and decision-making in specific situations.<br>• The GDH supports the view that IT provides support for knowledge application and acknowledges the important role that the ICT OC plays in successful knowledge application within the department.<br>• The interviewees understood that knowledge application is positively related to OP. |
| KM to effect GDH organisational policy and strategy alignment | • The survey respondents indicated that there was no known KM policy at the GDH, be it a knowledge retention policy, knowledge creation policy, knowledge-sharing policy or knowledge application policy.<br>• Most of the survey respondents indicated that there was no formal KM activity or practices at the GDH. | • Each of the interviewees provided a thoughtful response to all questions asked. All articulated the importance of a KM policy for knowledge creation, sharing, retention and application to the organisation and to themselves.<br>• Although the GDH was very clear about moving towards the knowledge economy and the objectives that it had set for itself in this regard, as well as the importance of KM, the |

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| | • Survey respondents indicated that KM did not seem to resonate as a key priority with the leadership because of lack of operationalisation of enabling policies to promote knowledge creation, sharing, retention and application.<br>• They all agreed that the GDH should define an organisational policy for KM. | organisational document clearly shows that little effort has been made by management to implement KM guidelines, policies, processes and procedures that will ensure KM for operational benefits.<br>• Workforce planning was not practised, there was a serious lack of skills and competency inventories, work processes were not documented, staff were not exposed to various business units and knowledge audits, job rotation, succession planning, coaching, CoP and mentorship were almost non-existent. These are considered in the KM literature as some of the key enablers of knowledge creation, sharing, retention and application.<br>• All interviewees agreed that the GDH should define an organisational policy for KM to achieve improvement in OP and HSD; such an organisational policy on KM should attempt to associate OP and HSD strategy with the KM process. |

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| Knowledge organisation (KM culture and collaborative working environment) | There was no centralised platform for organising information but the GDH, through its KM policies, could spearhead the process.<br>Efforts would not be successful without collaboration with ICT.<br>Reaction on bureaucracy was mixed but a higher percentage believed that there was too much bureaucracy that prohibited information creation, sharing, retention and application and hindered KM practices.<br>The bureaucratic and protocol-driven corporate culture in the GDH organisation, characterised by lack of trust, management commitment and perceptions, hindered knowledge-sharing.<br>The GDH is a highly-politicised environment, largely hierarchical, which requires observance of protocol and respect for seniority; as a result, the | • There was no centralised or merged platform for organising information. Interviewees suggested that the GDH through its KM policies could spearhead a process of organising information and knowledge.<br>• Interviewees said that bureaucracy does not help, it creates bottlenecks and is too officious.<br>• Boss is supreme, must be consulted on everything, vertical communication mostly. Secrecy, power, hierarchy, control hinder progress.<br>• There are many constraints, financial, political and skills shortage in knowledge and information management and the provision of an enabling environment at the GDH.<br>• The creation of a flexible environment that takes into account both the operational needs of the organisation and the needs of the employees operating in a knowledge economy is crucial. |

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| | survey respondents did not believe that the relationship between them and their bosses helped with the flow of information. It is therefore imperative for the GDH, which is in itself a knowledge-based organisation, to demand a less hierarchical and protocol-driven organisational structure but to opt for a team-based and process-driven organisation.<br>Survey respondents rated the GDH as poor to very poor in providing a better environment for improving the work of knowledge employees. | |
| OP and HSD | GDH OP levels and productivity levels have dropped by 20% and 19% respectively since the commencement of the public-sector reform in 1994. | • The organisation should attempt to associate OP and service delivery strategy with the information and knowledge creation process.<br>• Thus, all interviewees realised that the GDH had to use its knowledge assets effectively to improve OP and service delivery. |

| | | |
|---|---|---|
| | | • All the interviewees agreed that the GDH should define an organisational policy for KM to achieve improvement in OP and HSD.<br>• The interviewees also agreed that the effective flow and application of knowledge through the knowledge-sharing process could lead to improved OP and HSD.<br>• This understanding was in line with the suggestion that knowledge application was positively related to OP.<br>• The GDH must actively manage its knowledge and intellectual capital, since in the future the only improvement in OP and sustainable competitive advantage will be the creation of organisational knowledge and its proper management. |

The data that were collected quantitatively were analysed quantitatively; similarly, the data collected qualitatively were analysed qualitatively. This point was further emphasised by Creswell (2014), that the comparison and contrasting of the qualitative and quantitative outcomes created a more understandable picture of the phenomenon that was investigated. The results merely provided information on the same subject of KM at the GDH from different perspectives.

Table 94 explains the main dimensions captured in Figure 49 Figure 50, Figure 51, Figure 52, Figure 52 and Figure 54 that constitute the core of the current study's conceptual framework.

## 5.10. Summary

This chapter presented the qualitative analysis using a combination of mixed-methods data analysis and thematic content analysis, to describe the profiles of the interview participants in this study. All the interview participants were senior managers and executive employees of the GDH.

The findings of this study show that the interviewees would appreciate KM in their organisation with advanced and smart searching tools that could enable them to search and find knowledge quickly from a centralised knowledge repository. However, the findings revealed that the failure of the GDH to invest in upgrading and modernising its ICT is precisely the serious challenge facing the department.

The study also found that most of the interviewees consider OC to be one of the key factors affecting OP and HSD. In considering the role of KM in the department, they avowed that such a structure should ensure transparency and reliability in handling the KM activities.

KM was intelligibly demonstrated by all the interviewees as a mechanism for achieving improvement in OP and HSD. The interviewees thought that the creation of organisational strategies and policies for KM was very important in the organisation and should be associated with OP and HSD strategy. Finally, they agreed that

leadership through KM must be an integral part of strategic management, which contributes to OP and long-term success and competitiveness

The next and concluding chapter discusses the overall findings from the qualitative and quantitative analyses to address the study's four research questions.

# CHAPTER SIX: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

> The intellect has little to do on the road to discovery. There comes a leap in consciousness, call it intuition or what you will and the solution comes to you and you don't know how or why. All great discoveries are made this way
>
> Albert Einstein (1879-1955)

## 6.1. Introduction

This chapter provides a comprehensive summary of the research conducted. Having begun with reservations about whether the use of KM principles and techniques could improve OP and HSD at the GDH, the findings from this study have given indications that KM practices and techniques are likely to help improve OP and HSD according to the GDH's mandate. The quantitative research findings presented in Chapter Four evinced the KM capability dimensions demonstrated by the study's sample of GDH. They also revealed that KM capability (knowledge infrastructure capabilities and knowledge process capabilities) were the dimensions to show a relationship with the organisation's performance and HSD. The qualitative research findings, discussed in Chapter Five, provided a more complete understanding of the KM capability dimensions expressed in the study sample.

The objective of this chapter is to integrate and discuss the findings of both the quantitative and the qualitative data analyses, draw conclusions and make recommendations. This chapter is structured as follows: Section 6.1 is the introduction; Section 6.2 provides brief summaries of chapters; Section 6.3 presents the discussions on the research findings; Section 6.4 provides the recommendations from the study; Section 6.5 presents the limitations of the study; Section 6.6 outlines the implications of the research for theory and practice; Section 6.7 provides suggestions for further research; and Section 6.8 draws the final conclusion.

## 6.2. Summary of Chapters

The study began by giving an introduction to the project. Chapter One covered the detailed background of the national health-sector in South Africa; the national health profile; national health legislation; public-sector healthcare; the background to the research problem; the research focus; a definition of concepts; the statement of the research problem; the research objectives; the research questions; the rationale for the study; the aim of the study; the originality of the study; research methodology; ethical considerations; the scope of the study; assumptions; the limitations of the study; delimitations of the study; outline of the thesis chapters; and the referencing style used in this thesis.

Chapter Two of this study covered the literature review, which is an overview of published literature on KM. The chapter also examined theories of KM in relation to OP, HSD, public-sector reform and good governance, organisational transformation, the knowledge-based view and the KM capability framework.

Chapter Three discussed the research design and methodology used to carry out the survey and the nature of the analysis for interpreting data. The chapter gave an outline of the research methodology employed to address the research problem through the research questions.

Chapter Four and Chapter Five discussed the data analysis and presentation of the results for quantitative and qualitative methods respectively with the focus on the main research question, sub-questions and objectives. Both quantitative and qualitative data were presented in the themes identified by the researcher. The analysis of results focused attention on data convergence, inconsistency, contradiction and organisation, according to how data were transformed, consolidated, combined, compared and integrated. Qualitative data from the interviews and organisational documents were also presented in the form of narratives and some short extracts from the transcribed interviews were presented.

The findings of this study indicated that KM concepts were not universally understood at the GDH. It was found that the practice of KM at the GDH could contribute to the overall OP and HSD. The study further demonstrated the impact of KM practices as a driving force for organisational transformation and the effect of KM on the improvement of workforce productivity and organisational effectiveness.

## 6.3. Summary of research findings

The findings confirm that knowledge infrastructure capabilities and knowledge process capabilities, as dimensions identified in the literature, were demonstrated in this study's sample. These are interesting findings, as the formation of the KM capability framework original tests were conducted for the most part in the USA (Tseng, 2016; Mills & Smith, 2011).

The results of this study suggest that the concept of the use of KM for OP and HSD is also applicable in other industries and countries, with substantially, if not totally, different public-sector institutions, such as in South Africa.

### 6.3.1. Research Question 1

> What is the level of understanding of knowledge management in the GDH and related healthcare facilities?

The results of the study suggest that there are varying levels of understanding of KM in the department. Some employees believe that knowledge includes everything they know, while others think that KM includes experience, knowledge that is documented and available to others and that it is a new strategic initiative to remain competitive or a new way to add value to information in the department. In this case, the communalities ranged from .45 to .77 meaning that these views accorded well with each other. The factor solution was robust, as the amount of variability accounted for was 63.38%.

While the quantitative findings confirm that all the factors in this construct accorded well with each other, findings from the qualitative analysis reveal the different levels of understanding of KM.

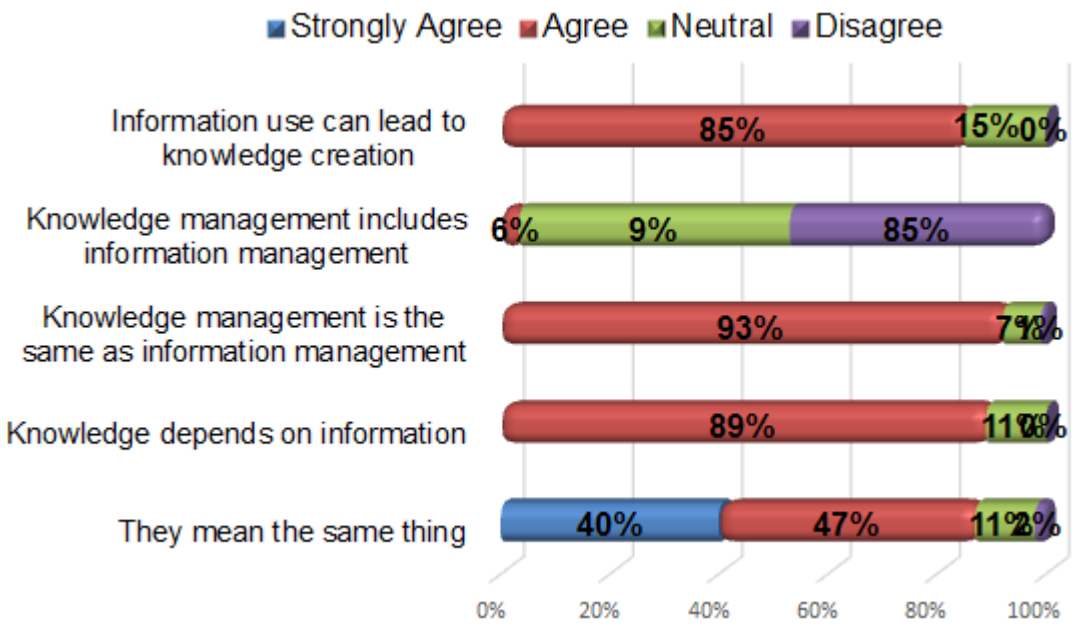


Figure 54: The relationship between knowledge and information.

The survey respondents' understanding of the relationship between KM and information was in accord with the opinions given in the survey, with the majority (agree) believing that knowledge and information are indistinguishable, that knowledge depends on information management and that information adoption could lead to knowledge creation. This is presented in Figure 54.

It is very important to note, as explained by Kim *et al.* (2014), that for the fields of information science and information systems, it is necessary for us to distinguish between 'information' and 'knowledge'. Failure to do so results in one or other of these terms being accepted as a synonym for the other, thereby confusing anyone who wishes to understand what each term signifies (Kim *et al.,* 2014). The present confusion over knowledge and information is perfectly illustrated in the aforementioned findings.

The findings from the document reviewed show that the concept of KM, knowledge-worker, knowledge organisation and knowledge economy were highlighted and well documented in the GDH strategy documents and operational plans but there was no comprehensive implementation plan. As a result, the responses from the questionnaire and interviews reveal that KM awareness was found to be low in the GDH, where it was associated and often confused with the information management.

Most of the employees, with the exception of a very few managerial staff, were ambivalent about the difference in the meaning of knowledge and information and viewed the concept of KM as difficult to articulate. They had the strong perception that KM was a technology and a sub-set of HIS used to store and faster process information.

The confusion seen in the study findings is the result of there being no implementation of KM policies and strategies (Farzin, Kahreh, Hesan & Khalouei, 2014). Therefore, implementation of KM strategies is cardinal and essential for the understanding of whole concept of KM and its implications on business. Farzin *et al.* (2014) assert that it provides a sustainable competitive advantage.

Although KM existed as a theory and captured in the organisational documents and business strategies of the GDH, was not well known in the GDH. The survey respondents revealed that KM was a new field for which they required proper education and training in order to bring awareness for managers and general staff of the role and importance of KM to the GDH. It is further confirmed by Farzin *et al.* (2014) that, unlike information or data, knowledge is an asset or resource which must be understood, classified, shared and measured. In the context of the above discussion, the researcher believes that, although KM is not necessarily a totally new discipline, it has a very positive impact on management theory and also on information management.

Because KM is unknown at the GDH, it partly explains why it did not appear to feature in day-to-day work practice. Looking at KM practices in the government departments, in general, the reality is that KM implementation is not always successful and

uncertainties and failures are not uncommon. This research has shown that, when it comes to the GDH, the situation becomes even more ambiguous, mainly because this concept is barely understood by executive and senior managers, let alone by other employee categories.

Apart from having no effective KM strategies and no adequate ICT infrastructure, the major difficulty faced by the GDH, today, is that of finding a way to overcome those softer cultural and structural obstacles that hinder the successful implementation of KM. The main barriers to implementing KM are all people-related issues. These include poor understanding of what KM involves, a paucity of top management leadership and an OC that inhibits knowledge-sharing.

Not much research has been conducted on KM in the GDH and likewise no KM initiatives have been implemented or experienced. Furthermore, even though there are some informal KM practices among the employees, they mainly cover one or even several aspects of KM but do not provide the big picture. There is a lack of general KM strategies, policies, guidelines or framework specifically associated with the GDH's OP and HSD domain.

The lack of understanding of KM as a concept was not only a challenge in the GDH but in the public-sector, in general. Owing to the lack of understanding of KM, the GDH faces many difficulties in the implementation process.

Finally, Bharadwaj *et al.* (2015) point out that the idea of supporting knowledge creation and the dissemination process is certainly not a new concept. It is important to remember that KM practice has been deeply influenced by recent improvement in our ability to process information and to communicate in both synchronous and asynchronous modes through many new devices and technologies. The challenge, then, is for the GDH to develop a coherent, aligned, comprehensive, systemic and systematic approach to KM that takes into consideration the constant interplay among organisational strategy, values, human capital and IT infrastructure.

### 6.3.2. Research Question 2

How are knowledge management strategies and practices aligned with the GDH strategies and operational objectives?

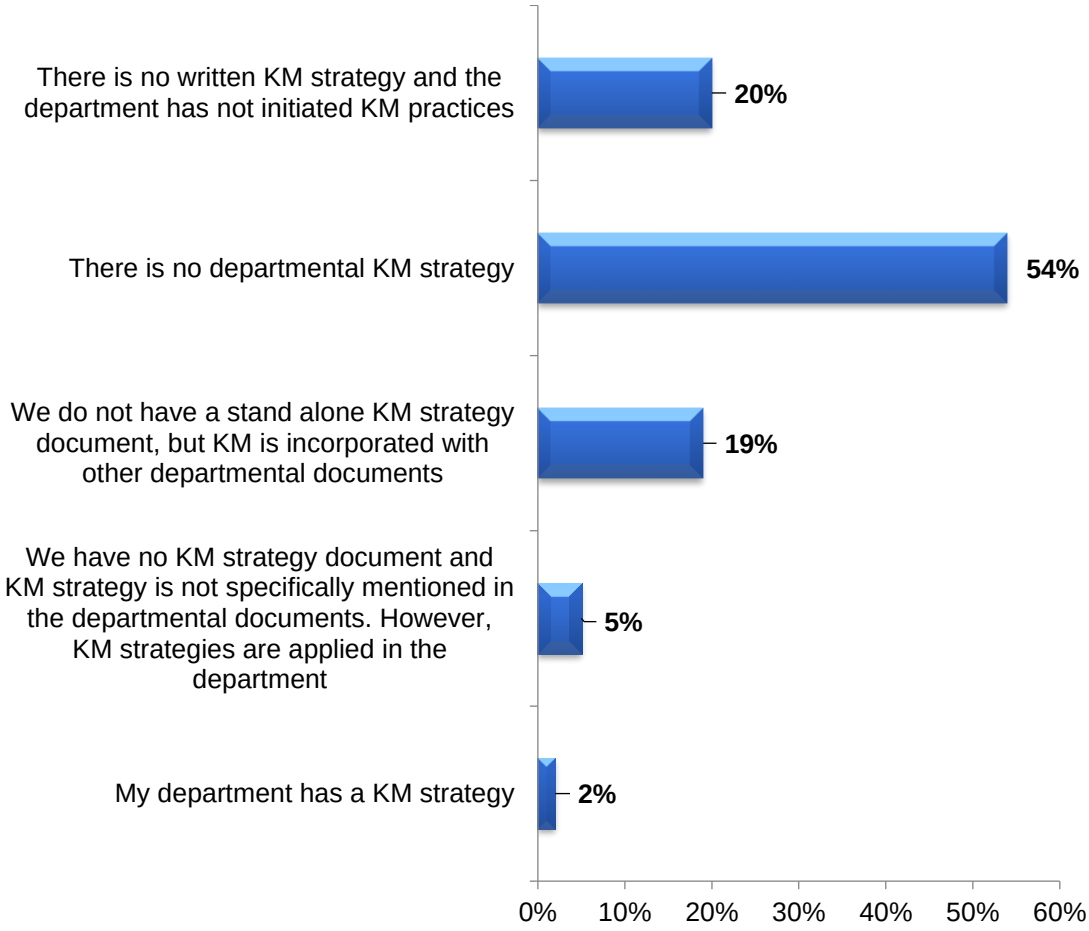


Figure 55: Statement which best fits KM development at the GDH.

The results of the study (Figure 55 and Figure 56) show that although there are KM documents and strategies in the GDH or that they are referred to in their business and operational business plans, they were never implemented and there were no programs in place for KM practices. This was also underlined by Miklosik & Zak (2015) that KM implementation includes all activities that aim at increasing the added value of knowledge.

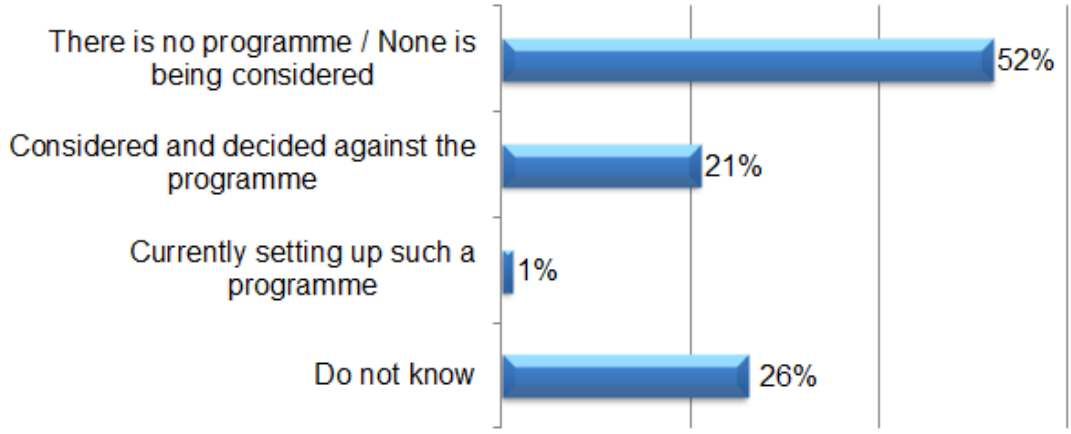


Figure 56: The statement which best describes the GDH

From the document review, the GDH had a departmental healthcare strategy and policies, a vision, mission statements and stated objectives (GDH, 2014; GDH, 2013; GDHSD, 2009). The operational plans also highlighted the critical success factors of the GDH healthcare strategy (GDH, 2014; GDH, 2013; GDHSD, 2009). However, the study findings from the both the survey and the interviews reveal that there were no written KM strategies, policies or guidelines at the GDH that are aligned with the departmental healthcare strategy and healthcare policies. They further indicate that such strategies and policies were not even specifically mentioned in the strategy documents. Neither was there any GDH initiated or implemented KM practices at all; there were no obvious policies or guidelines for knowledge creation/acquisition, sharing/transfer, retention/storage or application/use at the GDH, which are a crucial element of KM practices.

These findings indicate that, although the KM strategies are captured in the organisational strategy, they were never implemented in the department. The study findings also highlighted that the organisational strategic goals and key performance indicators were not properly communicated and employees were not participating in the formulation of strategic goals for the department.

Although the results from the survey and interviews agreed on the importance of knowledge-sharing/transfer and retention/storage, they also highlighted that management has made little effort to implement the KM guidelines, policies, processes

and procedures that would ensure knowledge-sharing and retention for operational benefits. There was a lack of operationalisation of enabling policies to promote KM.

People's positive attitudes to and psychological involvement with different KM practices could be developed with a strong organisational strategy (Botha, Coetzee & Coetzee, 2014; Ogbadu *et al.,* 2013; Chang & Chuang, 2011). This strategy would provide employees with a broader point of reference in identifying the importance and uniqueness of knowledge-related activities in shaping their prosperous and promising future destiny which an organisation strongly wishes to build. A strong organisational strategy and objectives serve as a guiding paradigm that provide employees with a 'sense of whole' to establish commitment and solidarity around an enduring cause (Botha *et al.,* 2014)

The study however confirmed that there are no KM strategies, policies or guidelines at the GDH. One of the means for driving the success of KM is to have a clear and well-planned strategy (Coleman, 2014; Zheng *et al.,* 2010). This provides the foundation for how the GDH could deploy its capabilities and resources to achieve its KM goals. The absence of knowledge-management strategies and policy implies that employees could have sometimes not been aware of what information and knowledge was available to help them effectively fulfil their job requirements and, even when they had valuable knowledge, they lacked guidance on how to effectively apply or preserve it.

In order to give greater significance to a KM strategy, it should support the imperative business issues of the GDH (Cohen & Olsen, 2015; Ogbadu *et al.,* 2013; Chang & Chuang, 2011).

The value proposition of KM as an important organisational resource has to be clearly articulated in order to create a passion among management and employees at the GDH if it is to be accomplished (Emadzade *et al.,* 2012). In short, the GDH should, in initiating a KM effort, carefully develop the preceding elements before a substantial investment is made. If knowledge is considered a crucial resource, it stands to reason that such an organisational resource must be effectively managed.

While the GDH attempts to manage its knowledge, this study has shown that its efforts could be inhibited by a variety of influences acting as barriers over and above the lack of KM policies and guidelines. One of the purposes of this research was to identify those barriers which may have been acting as obstacles to any KM efforts. Based on the results of this study, the researcher found a variety of organisational, managerial and resource-related influences acting as barriers to KM practice.

Of importance to bear in mind is that even with the availability of the best knowledge tool and a well-formulated policy as well as guidelines for the attention of employees to utilise extensively, if they feel it is not part of their line of work, the effort will not yield the desired results. This research has shown that KM practice need not be based on the preconception that an organisation can mandate people to share their knowledge.

It is likely that employees would be willing to share their knowledge because they desire to do so, not because they have been told to or have been coerced into doing so. This conclusion is supported by the results relating to the questionnaire question as to who owns the knowledge acquired in someone's present job (Figure 57). The fact that 183 (41%) of the survey respondents believed that the knowledge they acquired belonged to both the GDH and themselves and 38 (9%) were positive that it belonged to them personally, suggests that knowledge-sharing, for useful and successful results, can only be encouraged. This could result in the development of a framework for knowledge-sharing practices which are important components of KM strategy.

Low levels of KM awareness aligned to the absence of KM strategy, policies and guidelines at the GDH, do not imply the actual absence of KM. KM can be implemented implicitly. The GDH, which is preoccupied with achieving improved performance standards and high-quality HSD, does not seem to have entrenched KM-related practices. Nevertheless, even though they recorded low levels of KM awareness and lack of KM strategy, policy and guidelines, the GDH and the related regional healthcare entities and hospitals, achieved moderate levels of knowledge-based outcomes

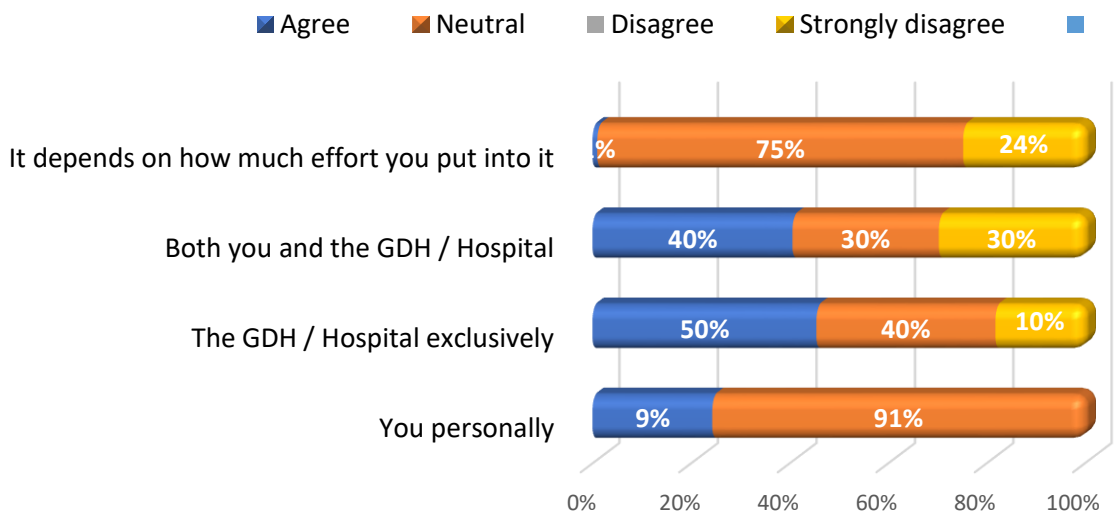


Figure 57: Who does knowledge you acquire in your present job belong to

### 6.3.3. Research Question 3

| How is knowledge management used by employees in the GDH? |
|---|

All the interviewees agreed that knowledge application/usage, in creating value, was the instrumentality to making knowledge more active and relevant for the department. They agreed that the GDH needed knowledge if it was to improve OP, operate efficiently and meet the objectives of the public-sector reform initiatives. This understanding was in line with the suggestion that knowledge application was positively related to creating value and thus improving OP (Caya *et al.,* 2014; Richards & Duxbury, 2015; Mills & Smith, 2011).

The study findings revealed that both the survey respondents and interview participants regarded knowledge application/usage as a mechanism to help the GDH accomplish its goals by encouraging all the staff members to share and apply their knowledge. They believed that the effective flow and application of knowledge through the knowledge-sharing/transfer process could lead to improved OP and HSD. This view is also supported by the literature discussed in Chapter Two, which points out

that sharing knowledge, in the organisation, is the most critical component in the entire KM process and that the ability to share knowledge is a key component of KM principles (Lam & Lambermont-Ford, 2010).

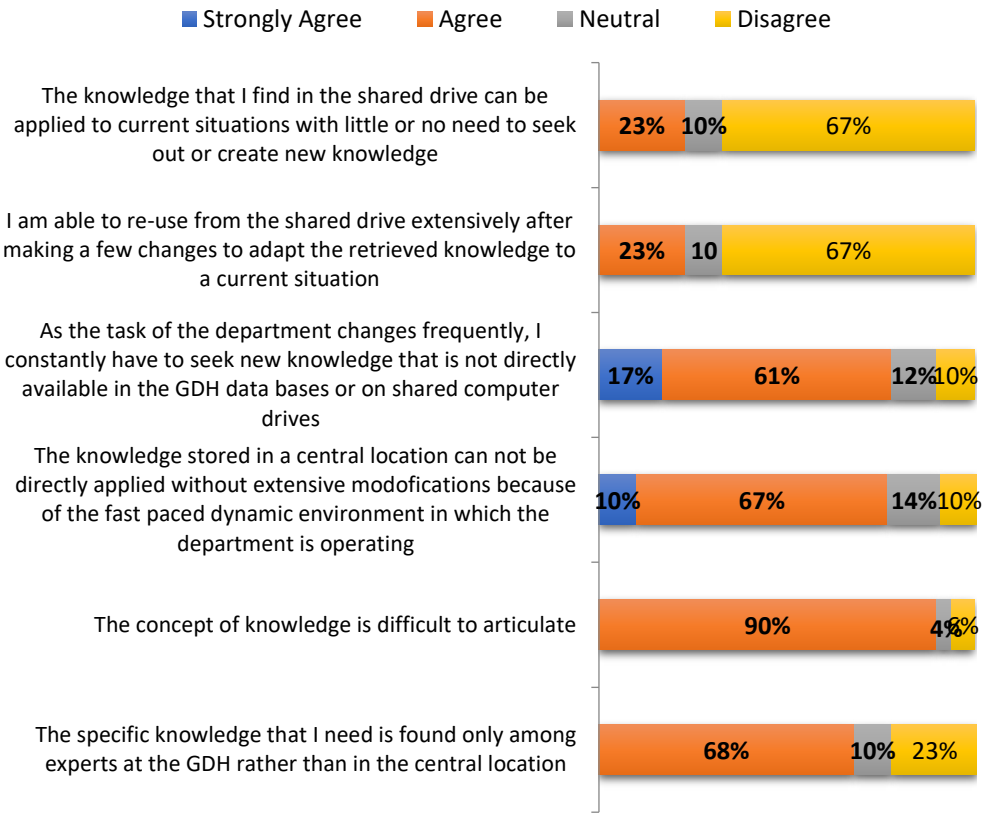


Figure 58: The environment for sharing of knowledge at the GDH

The findings also showed that the absence of a centralised shared knowledge repository for storing GDH information and knowledge resulted in scattered information and knowledge in the department, which made it difficult to access and share it. This view is also supported by the literature in that the central knowledge repository is critical for storing, accessing, organising and communicating knowledge to facilitate the retention, sharing, transfer, access and application of knowledge (Grant, 2015).

The findings also showed that all the survey respondents agreed that the employees in their departments were satisfied with collaborating to accomplish tasks. They were also willing to collaborate across business units. They were supportive of knowledge creation/acquisition and sharing/transfer (Figure 59). However, they indicated that they were not willing to accept responsibility when departmental tasks were not well

executed because they felt that they did not have access to sufficient and relevant knowledge to be able to execute their tasks, particularly in the shared repository. This is an indication that the survey respondents were not satisfied with the knowledge available to their departments and the related healthcare facilities and could not find the exact and sufficient knowledge they needed for doing their jobs.

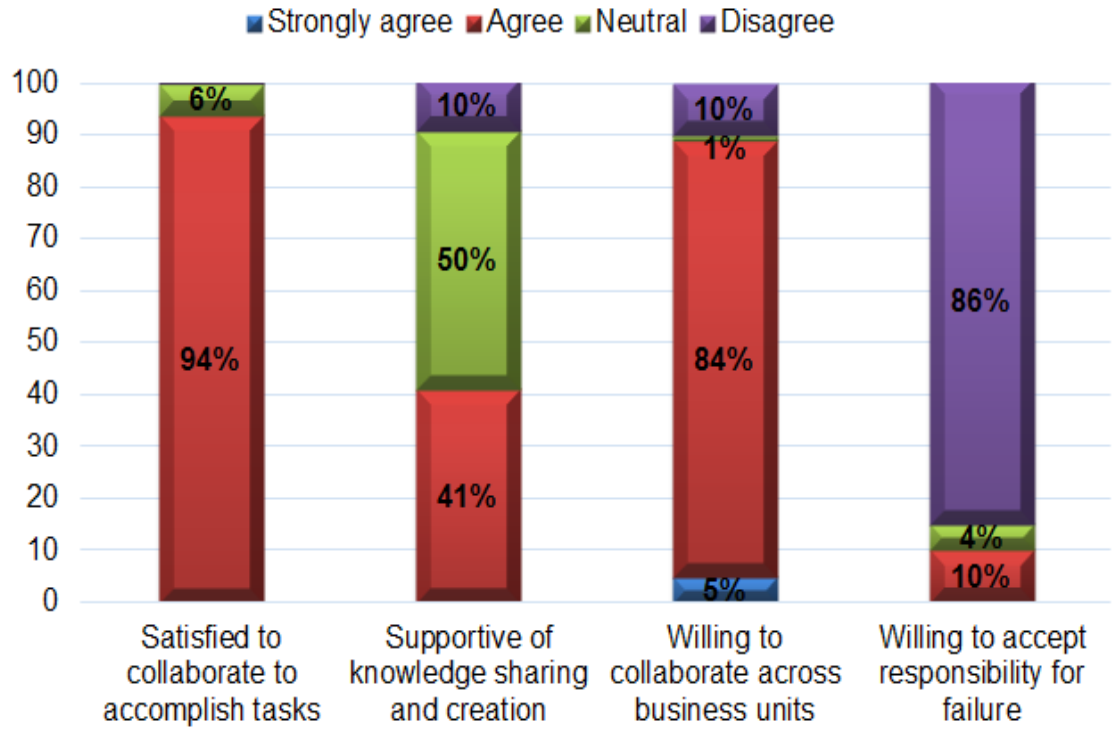


Figure 59: Employees are satisfied, supportive and willing

The survey responses indicated that, although many meetings were held at the GDH, the level of interactivity in those meetings was non-existent and therefore the level at which KM practices came into play was not evident. This implies that there was very little access to knowledge. There are barriers to knowledge-sharing because there is no information as to where knowledge is kept and no access to it. However, useful knowledge was found mainly among experts at the GDH.

It emerged in the findings that various ICT platforms were used for automation and, to some extent, knowledge creation/acquisition, sharing/transfer and retention/storage. However, in the survey and during the interviews, the survey respondents and interview participants paradoxically indicated that there was a need to invest in the ICT

infrastructure for advanced technology to manage information and knowledge. With regard to facilities for information and knowledge retention/storage, the findings showed that there were no facilities available at the GDH for knowledge retention/storage. The survey respondents indicated that there was a need to create a central knowledge or information database or repository in the GDH where all the departmental strategy documents, operating plans, healthcare policies and regulations could be kept in the form of soft copies, organised in areas of specialisation to enable subsequent access to knowledge.

It is crucial for transformation using KM to not only focus on the critical success factors for public-sector reform but also to understand the impact of KM on the public-sector employees and organisations and to prepare them accordingly. Public-sector organisation and public-sector reforms will hardly succeed without contextualising reform efforts within the KM realities of the modern economy (Brinkerhoff & Brinkerhoff, 2015; Mele & Ongaro, 2014). It is the researcher's conviction that, if public-sector reform is pursued using KM as discussed here, it will not only enhance the program's success but will also receive the credible support of the public in whose trust politicians and bureaucrats act as agents.

The study findings revealed the critical areas that were found to be lacking at the GDH, namely, that there is no political will or leadership support for KM in a highly politicised and bureaucratic OS. There is no capacity for creating a KM-receptive environment or convincing employees about the benefit of using KM to achieve the public-sector reform objectives (i.e. service delivery). Rigid OSs could disengage organisations from becoming co-learners with external players or actors.

The study findings further showed that there is a lack of leadership, at the GDH, that could verify and persuasively communicate the need to use KM for change. Literature has indicated that the implementation of planned change generally requires leaders to verify the need for change and persuade the employees of the organisation that change is necessary.

It was also revealed in the study findings that there is no KM strategy, no policy nor guidelines (Section 6.3.2) at the GDH. The requirement for leadership to develop a course of action for KM strategy for implementing change is crucial. Convincing employees of the need for change is obviously inadequate to bring about actual change but the proposed KM strategy must have new ideas, vision and goals and must be transformed into a course of action and a plan for achieving OP and service delivery.

### 6.3.4. Research Question 4

> How could the results of the literature review and the empirical data be used to create a knowledge management culture and a collaborative working environment for the GDH?

As the preceding discussions substantiated, the GDH OS and culture do not seem to be supportive of KM and there does not seem to be any particular understanding or enthusiasm among the leadership to instil a KM culture for all the aspects of knowledge, either through employee-training and development, employee performance management programs, mentoring programs, coaching programs, CoP, job rotation, employee incentive schemes or reward and recognition programs.

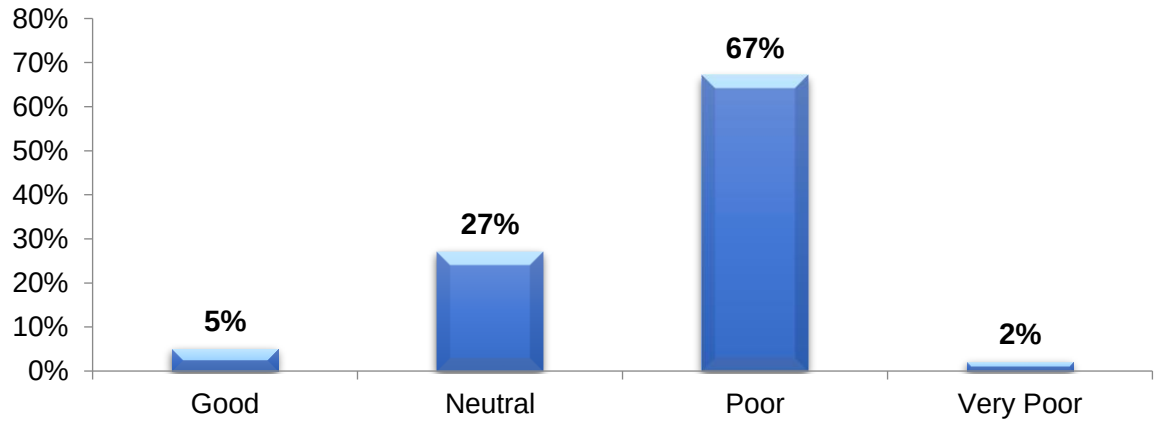


Figure 60: GDH OS allow and support employees

The findings in Figure 60 shows that 298 (67%) of the survey respondents mentioned that OSs of healthcare entities were poor in enabling and supporting employees to accomplish their tasks. A further 7 (2%) survey respondents were quite convinced that it was very poor, whereas 120 (27%) remained neutral. This must be understood in the context that the OSs in government departments are largely hierarchical and protocol-driven. There are also certain unspoken rules for engagement that dictate communication formalities and may prevent individuals from being frank and outspoken or discussing matters with certain other individuals at all; there are limits on what one can say that will be regarded as appropriate.

This is supported by the findings by Digan (2015) that the OC impacts on the flow of knowledge through an organisation as well as the willingness of its members to share and re-use knowledge. Zahidul *et al.* (2015) and Islam, Jasimuddin & Hasan (2015) assert further that, for knowledge creation, transfer, retention and application to work, there must exist a knowledge-sharing culture in an organisation. As the literature discussed in Chapter Two indicates, a knowledge-supporting OC is one of the most important conditions for ensuring an efficient knowledge flow among the organisation's members (Chang & Lin 2015; Islam *et al.* (2015).

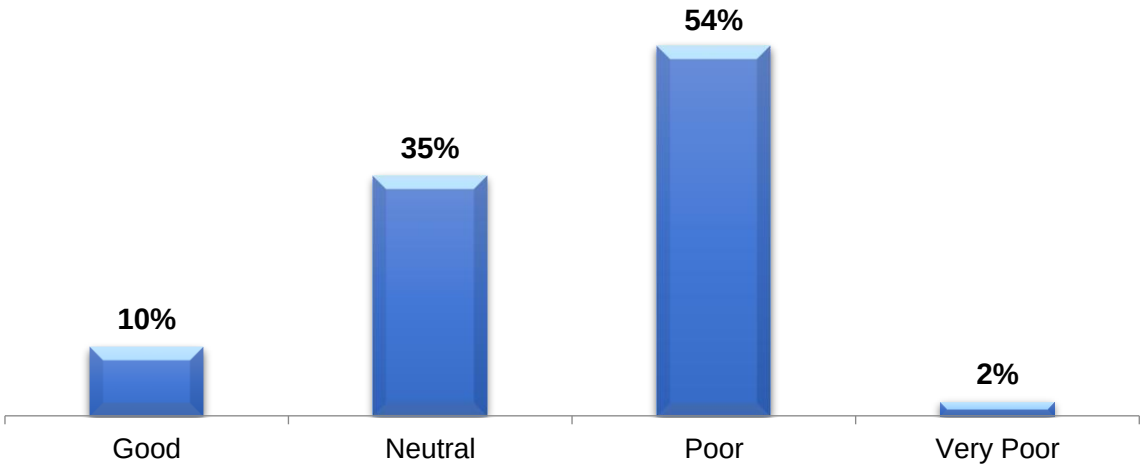


Figure 61: GDH provide an environment for improving the work knowledge

The findings illustrated in Figure 61 also show that the majority of survey respondents 241 (54%) rated the GDH as poor in providing a better environment for improving the work of knowledge employees and a further 7 (2%) rated it as very poor, while 157 (35%) chose not to give an opinion.

Interestingly, Lin *et al.* (2014) posit that the creation, sharing, retention and application of knowledge depended on factors like fewer hierarchical OSs, more inclusive and participatory management styles, employee motivation and eagerness to learn among employees. The results of this study suggest that KM culture is lacking at the GDH, as 241 (54%) survey respondents rated the GDH as poor in providing a better environment for improving the employees' production.

However, the qualitative analysis reported in Chapter Five confirmed that the main inhibitors to KM and its use in the GDH were the lack of leadership and KM strategy and policies, along with a hierarchical OS and a prohibitive and highly political OC. The GDH lacked proper organisational guidelines for sharing information; there was too much bureaucracy, which prohibited information sharing; employees did not know about each other's knowledge needs; there was no urgency to share knowledge; there was also a lack of open-mindedness among the employees, as well as a lack of trust of other employees' knowledge. The results also revealed that the OSs of the healthcare entities were poor when it came to enabling and supporting employees in accomplishing their tasks; the employees at the GDH were not rewarded or recognised for developing new knowledge; and the GDH did not promote the creation of new knowledge.

This means that the OC and structure have not altered enough in providing an inclusive environment and a flatter structure to generate the trust and openness necessary to persuade knowledge employees to share their knowledge (Grindle, 2013).

The qualitative analysis reported that there is no environment at the GDH conducive to KM practices and the culture in the GDH does not give the desired types of knowledge and knowledge-related activities, nor does it encourage knowledge creation, sharing, retention and application. The employees said that the lack of incentives and rewards schemes for KM initiatives was one of the factors that was inhibiting knowledge creation and sharing in the GDH and they emphasised that leaders ought to instil a knowledge-sharing culture either through reward and recognition programs or employee performance management.

It was also shown that the employees and management at the GDH believed that the improvement of technology and the techniques in the information system could be used to support and promote KM processes as could technology and essentially an organisational capability for effective knowledge storage, retention and access. Consistent with the above findings, Rajneesh & Kaur (2014), Handzic *et al.* (2016) and Gaffoor & Cloete (2010), in their respective studies, support the view that ICT provides support for knowledge application and the important role that the ICT OC plays in successful knowledge application within the department. However, a challenge is that the results of the study revealed that there was no proper ICT platform on which to share information and that information sharing or storage was not efficient because of the lack of support from the current inefficient ICT infrastructure and the insufficient technology. The survey respondents pointed out that the available ICT infrastructure was inefficient and inadequate for retaining and storing knowledge and that there were no central knowledge repositories and no information database from which to access information.

While quantitative findings confirm that all the KM capability dimensions exist at the GDH, the findings from the qualitative analysis reveal that the expression of KM capability dimensions in this study differs from those reported in the literature. Of the seven dimensions of KM capability dimensions, only information technology and OS have been demonstrated by employees in any way similar to those indicated in the literature. OC in the GDH is still conservative, prohibitive and highly political and it is likely that this environment is restrictive for the employees. The employees demonstrated some understanding of KM concepts and pro-activeness in creating, sharing and using knowledge, while others were inclined to less proactive behaviour. Finally, the survey respondents cited the lack of policies, strategies and guidelines as the main issue when it came to the lack of awareness of KM.

Some factors, both internal and external, have been suggested as possibly influencing the implementation of KM practices in the GDH. The OC and structure and information technology infrastructure are some of the internal factors that are argued to affect the employee behaviour examined in this study. In addition, the characteristics of the GDH as a government organisation, such as its hierarchical structure, the protocol and

legislation-driven environment, might be contributing to the external shaping of the GDH.

It is worth noting that the number of employees surveyed differed from those interviewed. The majority of the employees were general workers, whereas the interview survey respondents were exclusively senior managers and executive managers. This might be the reason why the extent and impact of the KM concepts, the organisational policies (*id est*, healthcare policies), strategies and guidelines (*id est*, KM) and OC, structure and information technology were somewhat different.

An effective KM program depends largely on the organisational members' willingness and ability to participate in all the elements of KM.

The study confirmed that KM consists of various organisational praxis requiring well-formulated policies and processes. It also confirmed that knowledge, in practice, was most often defined as tacit knowledge, in spite of, the problem of understanding what it meant. At the GDH, explicit knowledge, such as national healthcare policies, national healthcare regulations, acts of parliament on healthcare, the GDH organisational strategies and operational plans, the GDH annual reports and other institutional documents was available. The challenge, however, was that of managing explicit knowledge for the purposes of converting it into tacit knowledge. This shortcoming was revealed in the limited sharing and transfer of tacit knowledge, meaning that retrieval was complicated.

The study established that knowledge at GDH was not properly managed to facilitate the implementation of competitive programs for improving OP and HSD. It also indicated the lack of a systematic way of retrieving organisational and other relevant documents for knowledge application/usage. By creating a sustainable central knowledge repository or improved ICT infrastructure, it is the conclusion of this study that the GDH could flawlessly provide knowledge retrieval mechanisms in order to achieve improved OP and HSD, as well as providing timely electronic access to knowledge previously available only in print. The lack of proper access to knowledge

may compromise the ability of the GDH to make decisions that place it at a competitive advantage.

The study established that ICT could be both an enabler and a barrier to knowledge contribution at the GDH. The focus must be on extracting knowledge from the output of the applications that are already in use. A new knowledge environment means that ICT could be an enabler by providing a number of information systems for providing access, processing and the dissemination of information. ICT should not be an impediment preventing employees from sharing their knowledge. On the contrary, it should be a powerful enabler to encourage people to share/transfer more, not less, of their knowledge.

The findings demonstrated that the low application of ICT or inefficient ICT infrastructure at the GDH is a constraint and an inhibitor to KM praxis. The social modes in the existence of information and knowledge creation and sharing such as e-mail, internet, intranet, employee training workshops, coaching, mentoring and meetings have been found to somehow facilitate knowledge acquisition and share it at the GDH.

Since employee training workshops, coaching, mentoring and meetings enhance human interaction, they provide a platform for tacit knowledge acquisition. This is in line with recent trends in KM theory towards social platforms as an intelligent choice for information retrieval and knowledge-sharing (Rode, 2016) However, the study findings have shown that these programs for creating the required platform for tacit knowledge creation and sharing do not exist at the GDH.

#### 6.3.4.1. Knowledge creation/acquisition

Without the constant creation of knowledge, an organisation will find it very difficult to improve its OP and service delivery. It is more important for organisations to distinguish themselves through KM strategies and to align their knowledge strategies with their business strategies. The study findings show that learning at the GDH can be obstructed by power patterns, organisational protocol, structure and culture, as well

as the distinct political characteristics of the department, not forgetting the lack of time and opportunities.

Given the detailed organisational documents, the study found that the GDH has a rule-based culture. Healthcare rules and regulations and acts of parliament that seek compliance rather than innovation and improvement. This is defined by Von Krogh *et al.* (2012) as the culture of working according to the book and this culture hinders innovation, because the employees are not allowed, in such a culture, to think or practice 'outside the box'.

In the effort to implement the public-sector reform initiative to transform the government departments, the pressure on the GDH for accountability for taxpayers' money and media scrutiny eroded the staff's willingness to reflect upon and learn from mistakes to create new knowledge and accept accountability. This is demonstrated by the considerable number of survey respondents, 383 (86%), who indicated that they were not willing to accept responsibility when departmental tasks were not well executed.

It was shown that the public-sector reform initiatives and the PFMA changes that emanated predominantly from government regulations and healthcare policies, were perceived as being imposed (GDH, 2014; GDH, 2013; GDHSD, 2009) and were consequently received as unnecessary external interference supplementary to the challenges of knowledge creation in the GDH.

The findings also revealed that no knowledge creation/acquisition environment or incorporated social capital activities exist in the GDH; a situation which is a serious inhibitor for knowledge creation/acquisition (Bharadwaj *et al.,* 2015). This means that the GDH does not have the required employees' social network connected to share information with other actors to give content and meaning to knowledge creation/acquisition.

The literature has demonstrated that, if the GDH is to achieve improvement in OP and HSD, it will have to attempt to associate OP and HSD strategy with the information

and knowledge creation/acquisition process. The study found that it was sometimes difficult to enable some types of knowledge to be extracted and synthesised for efficient knowledge creation and acquisition. The creation of new knowledge and effective exploitation of existing knowledge is an important process in KM practice.

It was apparent that there was less focus on employee training and development at the GDH. This lack of employee training and development is in complete contradiction to the GDH intent stated in its organisational strategies for creating knowledge for the knowledge economy (GDH, 2014).

This effectively means that the GDH will forever lack the ability to make knowledge available or amplify the knowledge created by individuals, as well as crystallising and connecting it to an organisation's knowledge system. Employee training and development are a function of the knowledge-centred culture (Hislop, 2013; Cardoso *et al.,* 2012) and knowledge creation and acquisition could be enhanced by providing training and staff development programs for employees.

The study established that performance management is likely to be influenced negatively at the GDH as a result of the gaps in knowledge creation and acquisition (Section 5.6.2). The expected outputs of the public-sector reform initiative are accountability and transparency of public administration systems, which can be enhanced by effective performance-management programs.

The GDH's performance strength is now increasingly being measured in terms of the performance of their knowledge workers and the speed of their knowledge application. It is the lack of this knowledge-based environment and management of ideas and innovation at the GDH that reduces its attainment of operational efficiency.

The serious ICT challenges, namely the inefficient technology, poor information systems and the ineffective use of ICT to provide a platform for supporting the creation of a centralised knowledge repository at the GDH was considered a serious setback, not only for knowledge creation/acquisition but for the entire KM at the GDH.

Finally, a glaring lack of reward and recognition programs and incentive schemes at the GDH for knowledge creation and acquisition was identified as one of the critical factors that were inhibiting knowledge creation/acquisition and knowledge-sharing/transfer. The GDH does not have 'motivate and reward systems' to encourage knowledge creation/acquisition. It can only provide limited financial incentives. As a result, the employees are not eager to create or share knowledge, as they do not see how this would benefit them as individuals.

#### 6.3.4.2. Knowledge-sharing/transfer

The literature has shown that knowledge-sharing or transfer is the cornerstone of many organisations' KM strategy. Despite the growing significance of knowledge-sharing practices for OP and service delivery, several barriers at the GDH make it difficult for KM to achieve the goals and deliver a positive return on investment. The literature also showed that knowledge-sharing can work only if an organisation has a suitable culture that promotes it (Al-Bahussin & El-garaihy, 2013; Ogbadu *et al.,* 2013); Seba, Rowley & Delbridge, 2012).

At the GDH organisational level, barriers tend to be linked to the lack of defined knowledge-sharing policies, a lack of understanding of KM, infrastructure and resources, the poor accessibility to formal and informal meeting spaces and the uncreative environment. At the technological level, the barriers seem to be the inefficient and ineffective ICT infrastructure and the unrealistic expectations of ICT.

The overall organisational knowledge-sharing culture would lead to employees being willing to share ideas and insights because it was natural to them. It would not be something they were forced to do. Interaction and multiple ideas and viewpoints would be allowed for in this culture. However, the findings highlighted the lack of knowledge-sharing/transfer policies at the GDH as well as the lack of a suitable organisational environment and culture for knowledge-sharing/transfer; hence the lack of knowledge flow.

Several barriers to effective knowledge-sharing/transfer in the GDH pointed out in the findings included the fact that both the managers and their staff are simply not aware of KM and its benefits and there are poor communication channels between members of the department and across government departments. As a result, employees are not eager to share knowledge, as they do not see how sharing information would benefit them as individuals.

It also emerged that knowledge-sharing/transfer is not an assessment criterion for staff performance in the GDH. It was highlighted in the literature that rewards and recognitions programs and incentive schemes can influence employees to contribute to knowledge-sharing/transfer (Mannie *et al.,* 2013). When something is an explicit criterion for the assessment of staff performance, there are bound to be rewards or incentives. The GDH offers nothing to motivate the employees to share or transfer knowledge.

The study also provided some evidence that a lack of trust among the staff at the GDH might hinder the culture of knowledge-sharing. Most employees are unlikely to share their knowledge without the feeling of trust - trust that other employees would not misuse their knowledge, or trust that the knowledge is accurate and credible owing to the information source. It is mostly in informal networks that people trust each other, voluntarily share knowledge and insights with each other and collaborate actively and willingly.

Further, the findings highlighted the lack of managerial direction and leadership in the GDH especially regarding knowledge-sharing/transfer practices. Since knowledge-sharing/transfer is effectively voluntary and conscious, it is a new behaviour for some people to learn. It may require training and on-going support; clear guidelines are an obvious prerequisite for effective sharing at all the organisational levels.

The challenge for managers at the GDH is that of providing adequate training and development and of creating an environment in which employees want to share what they know and make use of what others know. Employees cannot always be expected to share/transfer their knowledge and insights simply because it is the right thing to

do. Managers at the GDH ought to reassure the employees that they should not keep ideas or concepts in reserve for fear of their intellectual property being stolen. The solution is to develop those ideas in collaboration with other employees. Hence, the emphasis on managers' expectations of long-term commitment and supportive roles are fundamental to creating a knowledge-centric sharing culture.

The other area highlighted by the study findings was the role of ICT in information sharing/transfer. The study showed that knowledge-sharing/transfer is as much a people and organisational issue as it is a technological challenge. Technology has the ability to offer instant access to large amounts of data and information and to enable long- and short-distance collaboration that facilitates a team approach, both within and between departments at the GDH, regional healthcare entities and hospitals. Literature has shown that there is little doubt that technology can act as a facilitator to encourage and support knowledge-sharing/transfer processes by making knowledge the process easier and more effective. The key issue, however, is to choose and implement a suitable technology that provides a close fit between people and the department.

Technology is rarely the ultimate solution to, or driver of, a knowledge-sharing/transfer strategy but the integration of the right technology is crucial. The numerous technologies used at the GDH, such as the internet and intranet, e-mail systems and electronic noticeboards, assist greatly in reducing knowledge-sharing barriers.

#### 6.3.4.3. Knowledge retention/storage,

Several studies in the literature review in Chapter Two of this study have shown that the main purpose of knowledge retention/storage is to organise and store institutional knowledge, which is widely referred to as organisational memory.

The staff turnover would be harmful to organisational learning, which, in turn, would also be harmful for organisational memory. Knowledge-management strategies, including knowledge retention/storage, could contribute to corporate governance and

the prevention of the loss of intellectual capital, as well as improving OP and service delivery by public-sector organisations.

However, the findings have shown that there are no defined knowledge-sharing or storage policies at the GDH and that there are noticeable disparities in the availability of knowledge retention and storage strategies. The findings also revealed that there was a very limited knowledge retention culture and awareness at the GDH which should be supported by values like trust, co-operation, openness and innovation. These could enhance knowledge the shape of knowledge and behaviours that would contribute to knowledge retention.

The study revealed that there was no OS that promotes interaction between members of communities and allows for the building of bridges between disparate functions that should enhance knowledge behaviours that would contribute to knowledge retention/storage. Very little effort has been made by management to put procedures and processes in place that would ensure knowledge retention to the operational benefit of the GDH. Also, knowledge retention does not seem to resonate as a key priority with the leadership of the GDH.

The study findings concur with literature's argument that the loss of organisational knowledge is a menace for operational efficiency and effectiveness at the GDH. The study highlights the main knowledge loss drivers at the GDH as the lack of knowledge retention policies, limited understanding of its benefits, lack of rewards and recognition incentives, a shortage of skilled resources, commitment from senior management, the brain drain and the lack of appropriate ICT.

The loss of knowledge at the GDH as a result of the inability to retain experienced and qualified staff occurs when the knowledge leaves or documents cannot be found. Such employee turnover means that the GDH loses experienced knowledge workers (GDH, 2014; GDH, 2013; GDHSD, 2009) with their knowledge, which, in some cases, is the core of their business. The study findings showed that the performance disparities left by these knowledge workers has compromised the quality of HSD in the public HS. With the lack of knowledge retention, policies and programs for retaining these

knowledge workers at the GDH, the department has lost knowledgeable healthcare expertise to its private-sector competitors.

The role of ICT, as highlighted in Chapter Two of this study, is critical in facilitating knowledge retention/storage through its supporting infrastructure. The literature also emphasises that the absence of technology would result in an incomplete knowledge retention/storage process. The findings of the study pointed to the inefficient and ineffective ICT infrastructure and lack of a centralised knowledge repository at the GDH to support knowledge-sharing and storage.

Inadequate infrastructure remains one of the major prerequisites for the deployment of effective KM infrastructure. Despite the prominent role played by ICT in supporting knowledge-sharing and storage, the GDH has not shown full commitment to improving ICT infrastructure in transforming governance and automation practices.

Finally, the findings revealed that there were no KM services' departments at the GDH where its knowledge needs could be retained and stored. The study showed that the retention/storage of organisational knowledge was nobody's responsibility at the GDH and no person or team was responsible for knowledge retention/storage. The GDH does not have positions for knowledge officers or departments, yet a great deal of knowledge is created and acquired in the organisations. This is probably the effect of KM not being implemented at the GDH.

#### 6.3.4.4. Knowledge application/use

The literature has demonstrated in many ways that the primary goal of organisations is to enable their employees to have access to the right knowledge and information at the right time and to be able to apply it in the execution of their tasks in the most effective manner.

Although the study findings showed that management and the employees at the GDH indicated that knowledge application was a mechanism for helping the GDH to accomplish its business objectives and was the means of making knowledge more

active and relevant for the department in creating value, the majority of 409 (91%) survey respondents did not consult and did not have access to the KM services in the GDH. Neither is there a KM application/usage policy, nor did they consult the KM service department, whose responsibility it is to provide knowledge application services in support of the GDH management and staff.

These findings clearly show a serious business risk for the GDH, as the employees did not have access to the crucial knowledge needed for performing their tasks and for being employed in the organisation's service delivery strategies and processes. There was also no facility for providing KM services to them. The findings show that, if employees do not find it easy to locate the right kind of knowledge in the right form, they may find it difficult to contribute to improvement in the OP and HSD.

The information at the GDH is not centralised in a shared knowledge repository and it is of little value, as it cannot serve the purpose of knowledge application. This is confirmed by 235 (52%) of the survey respondents, who pointed out that the knowledge they needed was located in paper-based documents. A further 209 (47%) agreed that the knowledge they needed for doing their work was stored in bits and pieces on computers in the department.

The findings thus indicated that this lack of a centralised knowledge repository is a great disadvantage to the employees, because the tasks change frequently, so the employees constantly have to seek new knowledge, which is not readily available. The available information at the various locations in the GDH could not be relied upon to help them complete their tasks and employees were not able, after making a few changes, to re-use knowledge from the available shared drive extensively.

It is clear that most employees at the GDH view knowledge application as one of the mechanisms that is directly related to OP. The literature asserts that, to improve its performance, knowledge application is a process of making available organisational knowledge more accessible, active and relevant for the organisation.

To this end the findings show that the GDH and its related regional healthcare centres and hospitals, need to apply their organisational knowledge to their healthcare services to generate value and improve on OP by various means, such as creating a centralised knowledge repository, efficient and effective ICT infrastructure and a knowledge application culture, as well as repackaging available knowledge, training and motivating employees, reward and recognition programs, encouraging employees to think creatively and applying employees' knowledge and understanding of the GDH's processes and services.

It has also been established that the main barriers to knowledge application in the GDH were not at the level of employees' resistance but lay in an institutionalised OC and OS that did not facilitate learning through the use of knowledge. Lack of leadership emerged as one of the key barriers to knowledge application. A strong and committed organisational leadership, appropriately defined goals and a facilitative infrastructure were identified as important enables of knowledge application but they are patently lacking at the GDH.

The failure to build networks for CoPs at the GDH – that is, groups of people who share and apply their knowledge - was obvious. The CoP was more about fostering collaboration, participation, directing and organising activities. The leadership at the GDH should understand and promote the kind of social structure in the GDH that could take responsibility for fostering learning, developing competencies and managing knowledge application. This suggests the need for strong leadership as a key facilitator in the use of knowledge (ref: Section 6.3.9).

### 6.3.5. Information Technology

The focus of knowledge application strategies and policies is on technology and management of explicit and tacit forms of knowledge.

The findings of the study revealed that ICT is a powerful tool that provides an edge in harvesting knowledge. While the research also revealed that knowledge resides in both coded form and in human minds, employee socialisation, training and motivation

are also the key factors in KM practices. This is again confirmed by Newell (2015) who maintains that knowledge cannot exist only through ICT and independently of humans. Krylova *et al.* (2016) argue that both information technology (structured knowledge) and social systems (human knowledge and social knowledge) are equally important in KM practices.

Newell (2015) and Yusof *et al.* (2012) who argue that, with the increasing popularity of organisational social networks and social media (digitisation), the GDH is better positioned to maximise the application of its knowledge throughout the organisation's hierarchy. The amount of organisational knowledge that is available through the use of ICT further provides the GDH with competitive advantage for improvement in OP and HSD.

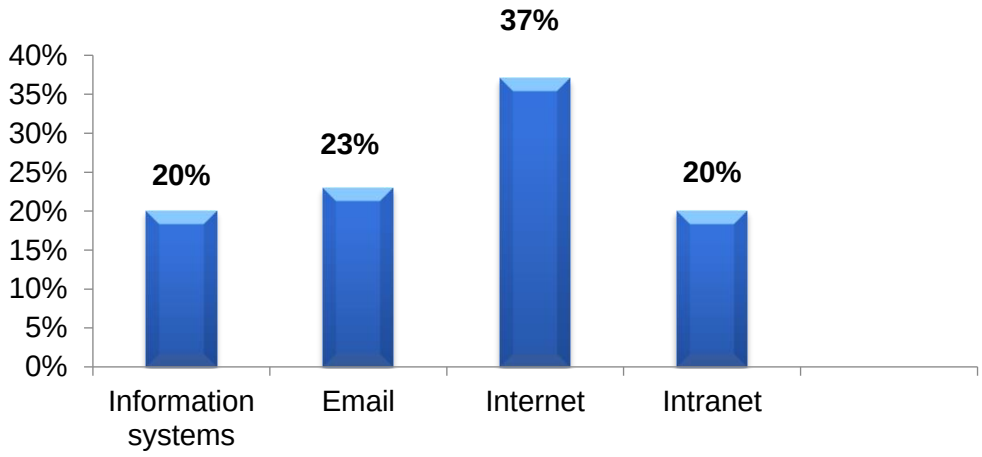


Figure 62: Modern technologies in use at GDH that enhance the KM practice?

It emerged from the findings that the use of ICT for KM is a critical point of impact on OP and HSD. The organisational documents placed emphasis on the use of technology to guarantee the effective application and usage of knowledge (Newell, 2015) in the GDH. This view was confirmed by the findings of the study (Figure 62), as 166 (37%) survey respondents stated that the practice of KM was enhanced by the internet, 101 (23%) mentioned e-mail, 91 (20%) mentioned information systems and 90 (20%) pointed to the intranet as playing a role in enhancing the environment for knowledge application practices.

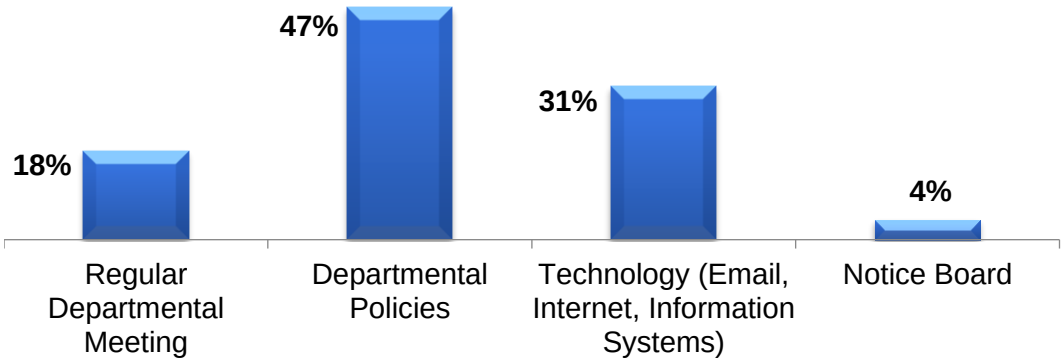


Figure 63: How does the department gather, share and retain knowledge

It was also revealed that 139 (31%) survey respondents mentioned that they gathered and shared knowledge using technology media such as e-mail, internet and information systems (Figure 63) and that MIS, internet and government website are preferred tools (Figure 64) for knowledge creation.

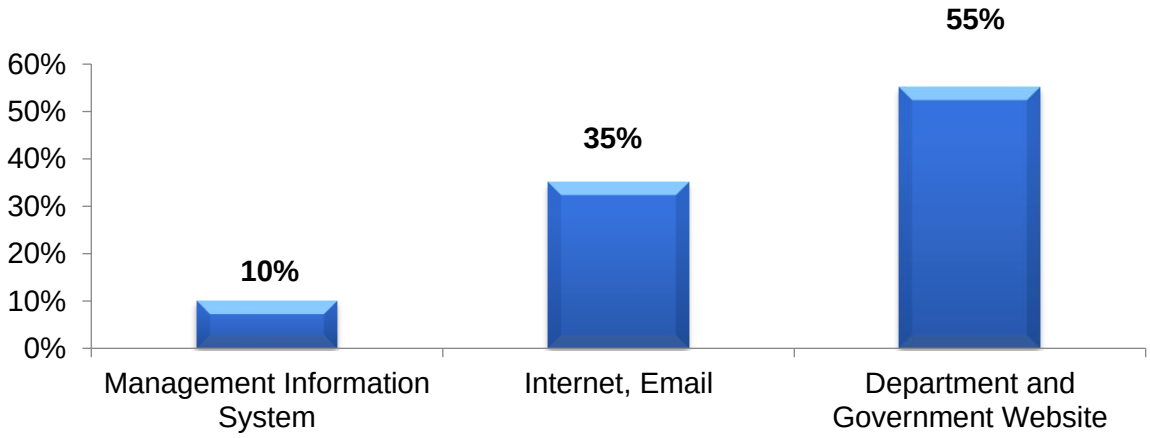


Figure 64: Tools, methods and techniques used of knowledge creation

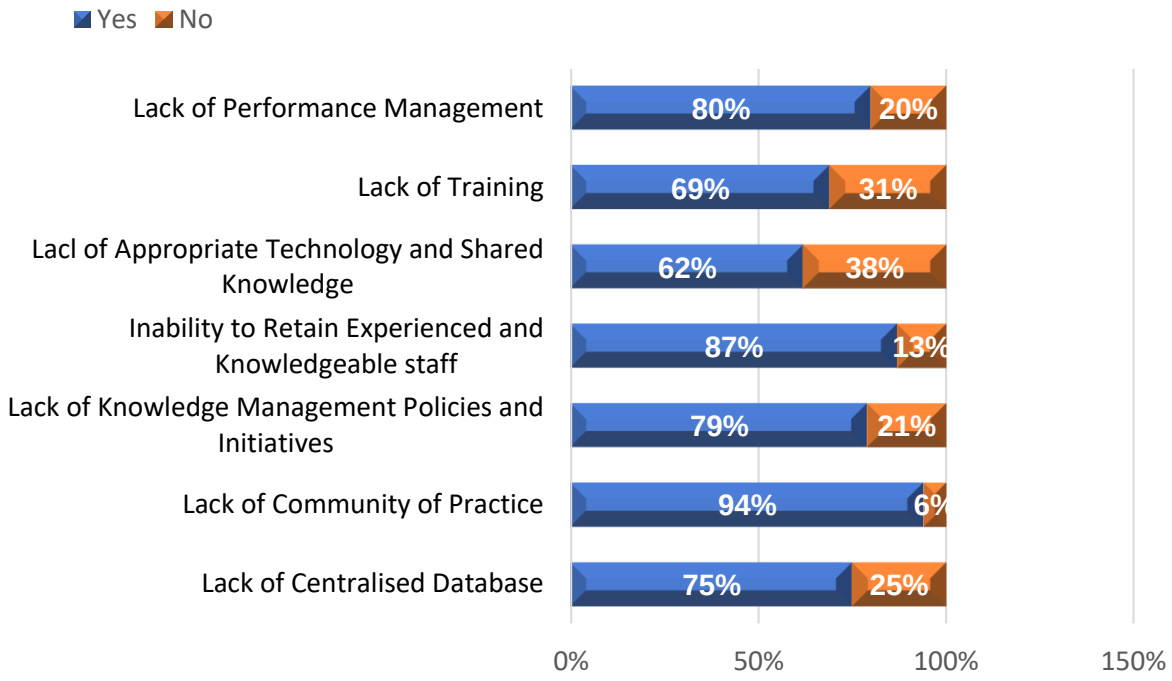


Figure 65: Knowledge gaps which matter in the fulfilment of your duties

The study revealed that the failure of the GDH to invest in upgrading and modernising its ICT is precisely the most serious challenge facing the department. The GDH has failed to fully implement a key KM process and a business imperative in the organisation in the form of a centralised knowledge repository.

This view was strongly expressed by 334 (75%) survey respondents who mentioned the lack of a centralised database at the GDH (Figure 65). This challenge was further compounded by the GDH's inability to make a periodic knowledge contribution to update the knowledge in a shared repository, which was confirmed by 348 (78%) survey respondents.

The non-existence of a centralised knowledge repository or a poorly maintained knowledge repository at the GDH is a serious inhibitor of KM implementation in the organisation (Camison & Villar-Lopez, 2011). The study's findings revealed that 235 (52%) of the survey respondents mentioned that the knowledge they needed was located in paper-based documents and 179 (40%) survey respondents indicated that it was located in the colleagues' heads and was therefore not readily available or accessible. 209 (47%) survey respondents mentioned that the knowledge they needed

to do their work was in computers scattered around the department, which made it even less available and accessible. These findings show that information in the GDH is not centralised in a shared knowledge repository and, as such, it is of little value, as it cannot effectively serve the concept of knowledge-sharing and knowledge application (Grant, 2015).

The study findings highlighted the critical KM requirement of creating a centralised knowledge repository for storing, accessing, organising and communicating knowledge. The knowledge gained by employees over a period of time could be retained/stored in a centralised knowledge repository or shared folders for future reference, even when the original authors have long left the organisation. Knowledge workers are becoming a vital resource in 21st century organisations. One of the goals of KM, as discussed in Chapter Two, is to deliver the intellectual capacity of the organisation to the knowledge workers who make the day-to-day decisions that determine the success or failure of business.

According to Balkumar *et al.* (2014), a centralised knowledge repository plays an important role in preserving organisational memory. This view is supported by Camisón & Villar-López (2011) when they submitted that effective use of ICT through the creation of a centralised knowledge repository by the GDH could support the elements in the processes of a KM strategy. Be that as it may, technology is only one form of memory that employees consult when solving problems – and its use is limited (Newell, 2015).

The preceding pronouncements, in terms of the findings of this study, are not evident in the GDH, as 250 (56%) survey respondents highlighted serious ICT challenges in supporting KM in the GDH, showing inefficient technology to be the greatest barrier to knowledge application; 208 (46%) survey respondents indicated poor information systems as the biggest obstacle to knowledge-sharing and 277 (62%) survey respondents specified the lack of appropriate technology as a serious problem in creating and sharing knowledge.

### 6.3.6. Organisational Culture

OC is another imperative factor for successful KM (Al-Bahussin & El-garaihy, 2013; Kagaari & James, 2011). The culture that exists at the GDH is not supportive of KM and does not value knowledge, neither does it encourage its creation, sharing, storing and application.

The biggest challenge for the GDH actually lies in developing a culture of KM endeavour. This study showed that OC was the largest obstacle faced by the GDH in creating a successful knowledge-based organisation.

Literature has shown that an organisation's culture has a profound impact on its capacity to produce knowledge-related outputs. The GDH has not demonstrated the existence of this crucial element in its OC. On the contrary, there was much distrust among employees and management.

The employees at the GDH showed unwillingness to openly share mistakes or take accountability for poor performance. This was mainly because of a low tolerance of reasonable mistakes and lack of trust among individuals and groups. Thus, there is very little or no proactive and open knowledge-sharing process. The GDH has neither encouraged nor fostered an innovative culture in which individuals are constantly encouraged to generate innovative ideas, knowledge and solutions. Likewise, there was no culture which emphasised problem-seeking and solving or that which permitted employees to query existing praxes and to take action through empowerment.

Owing to the highly influential nature of an OC to the success of KM, the GDH should ensure that their KM initiatives fit into their OC, or else they should be prepared to change it.

### 6.3.7. Organisational Structure

Another central aspect for KM practices is the existence of an appropriate OS. This implies establishing a set of roles and teams to perform knowledge-related tasks.

Thus, the purpose of an OS is the division of work among employees in the organisation and the co-ordination of their activities so they are directed towards the goals of the organisation (Ajagbe *et al.,* 2015). The researcher sees OS as how jobs are formally divided, grouped and coordinated and are governed by procedures and processes to prescribe behaviour.

Some studies have concluded that an organisation cannot exist without an OS. The study findings revealed that the GDH has a very conservative, political and hierarchical OS. This effectively means that any communication would assume a top-down approach. The study findings have revealed that, although meetings are held at the GDH, their interactive nature is very questionable.

The study has also shown that there is no established KM services department and no knowledge champions simply because the structure does not allow for it. This is despite the fact that some existing functions in the department, such as HR management and ICT, have already been working with knowledge issues in some form or other. The GDH could establish a crucial department or a team of employees with specific and formal responsibilities for KM.

One of the more commonly mentioned roles in the literature is that of Chief Knowledge Officer or the equivalent. He/she takes the leading role to coordinate, manage and set the course for KM. The execution of KM processes lies at the kernel of creating a successful knowledge-based organisation. However, without an established KM services department, a suitable OS, a team of employees (i.e. CoP) or a Chief Knowledge Officer or knowledge champions and remembering the lack of defined KM processes at the GDH, KM practices would remain an elusive proposition for the GDH.

It is important for the GDH to adopt a process-based view of KM, with appropriate structural interventions and mechanisms in order to ensure that the KM processes are addressed in a systematic and structured manner. For instance, in knowledge-sharing/transfer, ICT should be supplemented with face-to-face discussion, because the latter could provide a richer medium for transferring/sharing knowledge. When a

clear OS exists, employees perform better, tasks are divided or shared and productivity is increased.

### 6.3.8. Organisational Performance and Healthcare Service Delivery

For the achievement of a sustainable competitive advantage and improvement in OP, the GDH must actively manage its knowledge and intellectual capital. The literature has demonstrated that there is a close relationship between organisational KM and OP and that KM capability could be a critical mediator between external knowledge and OP (Tseng & Wu, 2012; Chang & Chuang, 2011).

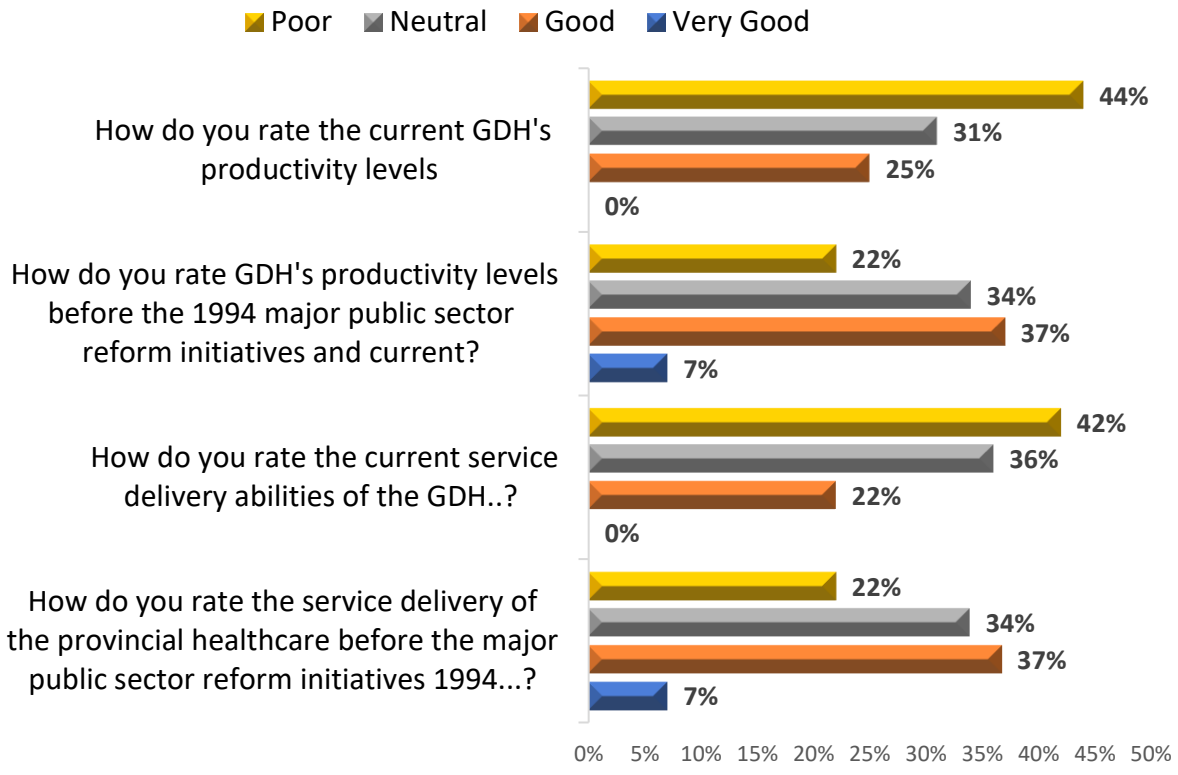


Figure 66: GDH Service delivery and performance rating

The findings revealed that, in the GDH, the strategic goals were not properly communicated and employees were uncertain of the department's strategic goals. The greatest impediment to improvement in OP and HSD at the GDH was that of poor strategy formulation in terms of the lack of clearly-defined key performance objectives and defined output targets. Add to this, the poor communication of key objectives, unrealistic and unattainable objectives and a lack of consultation. This indicated that

there was no alignment of organisational strategy and OP management in the GDH. This has resulted in the drop in OP levels and productivity levels by respectively 20% and 19% since the commencement of the public-sector reform in 1994 (Figure 66).

The overall presentation in Figure 66 shows that provincial healthcare before the major public-sector reform received good ratings from survey respondents.

The findings also revealed that the GDH did not have proper basic human resource practices in place to influence the productivity, skills development, attitudes and behaviour of its employees to do their work and to be measured against set key performance indicators. This was confirmed by 337 (75%) survey respondents who disagreed that the GDH offered an effective development program for poor performers to enhance their performance at work (Figure 67).

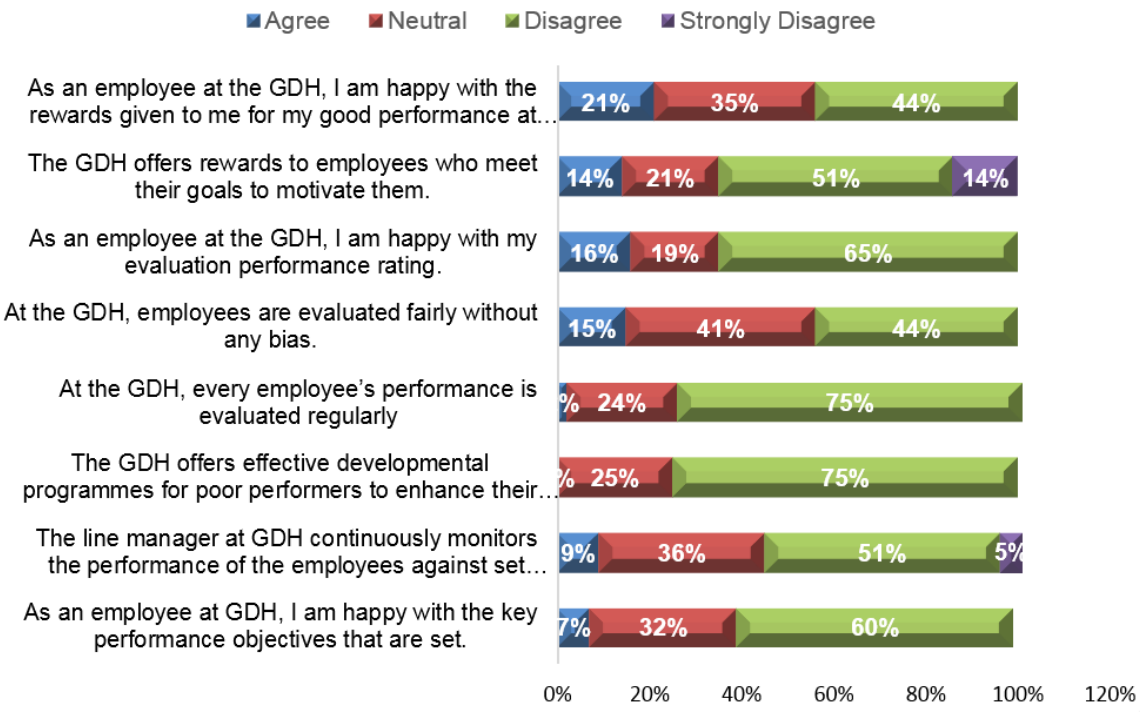


Figure 67: GDH employee's performance management

The employees at the GDH were very unhappy, demotivated and uncommitted. This had resulted in the drop in OP and service delivery levels. It was shown in the study that the employees' unhappiness was caused by poor application of the performance

management measurement and the lack of fair incentive schemes to compensate employees accurately.

Finally, the findings of this study revealed that the GDH failed to retain skilled resources because there were no retention policies in place and further showed that commitment at the GDH was very unsatisfactory, with 373 (83%) survey respondents rating job satisfaction as low. To this end, Evans *et al.* (2015) cautioned that retaining the right staff is just as important as performance management in motivating and stimulating OP and service delivery.

### 6.3.9. Leadership

Although leadership was not one of the knowledge infrastructure capabilities dimensions, it was included for discussion mainly because it is part of the collaborative working environment in Research Question Four. Further, it was argued in Section 2.9 of the literature review on knowledge-based performance and service delivery that leadership is a critical success factor that should be taken into consideration as far as enhancing the knowledge–based view at the GDH is concerned.

Leadership was recognised in the literature as an integral part of strategic management, which contributes to OP and long-term success and competitiveness (Vimba *et al.,* 2013). It ensures that management develops an ethics strategy aimed at providing a road map to ensuring the sustained development of individual and organisational character. Fundamental to increasing overall effectiveness and competitive advantage is the combination of appropriate leadership capabilities and effective knowledge resource management (Ryan *et al.,* 2012) and also because of the improved OP (Vimba *et al.,* 2013), the inclusion of effective leadership leads to greater satisfaction for both employees and customers.

Ryan *et al.* (2012) also note that the importance of leaders who champion the development of KM cannot be overstated. He further maintains that knowledge and information management must be guided by competent leadership. Leadership has the potential to exert a positive impact by providing direction for the development of

knowledge creation, sharing and transfer within the organisation (Ryan *et al.,* 2012: 64).

The Ten-Point Plan document of the National DoH - South Africa (DoH, 2014; DoH, 2015) requires the Provincial DoH to improve their delivery of health services in the country by providing strategic leadership for better health outcomes.

Many of these studies in KM in the public-sector and government argue that leadership is a vital success factor in enabling the effective promotion of knowledge-sharing and creating an appropriate OC (Seba *et al.,* 2012; Suppiah & Singh Sandhu, 2011). Leadership plays a key role in influencing the success of KM. They should, for example, display willingness to share and offer their knowledge freely to others in the organisation, to continuously search for new knowledge and ideas (Gilson & Daire, 2011). The lack of such leadership competencies at the GDH is one of the reasons why KM has not even been considered.

Leadership emerged as a key theme in the OP dimension (Section 5.6.3.1) of the qualitative data analysis. The study findings revealed that, when it came to encouraging people to reflect on information and data and re-framing these at the strategic level (Figure 68), 268 (60%) of the survey respondents rated the management or leadership at the GDH or related regional healthcare entities poorly.

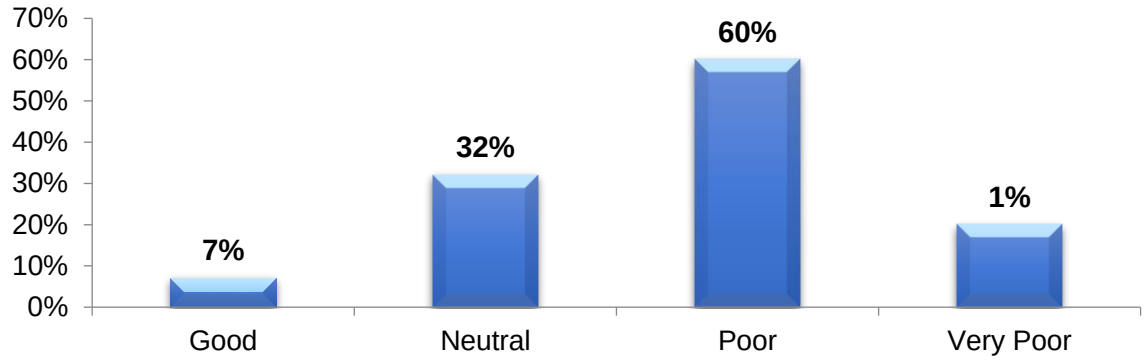


Figure 68: GDH Management encourage people to reflect on information

The survey respondents indicated that KM did not seem to resonate as a key priority with the leadership because there was no operationalisation of enabling policies to promote knowledge creation, sharing, retention and application.

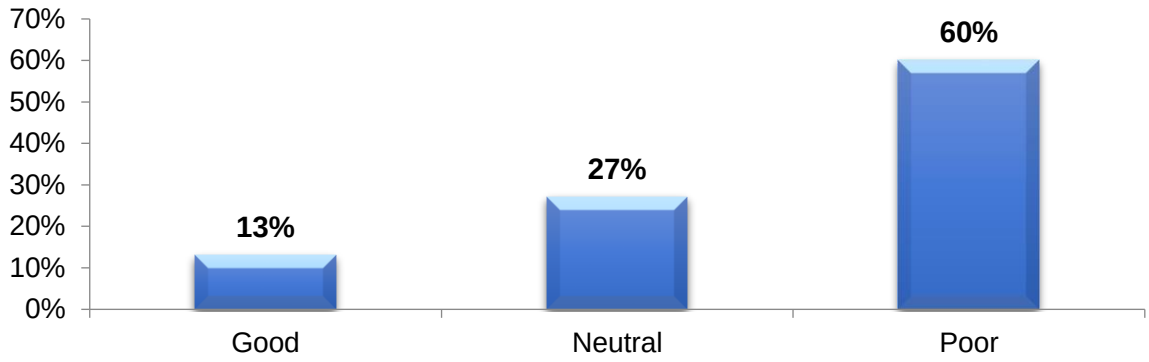


Figure 69: Employees encouragement to exchange information and knowledge

Furthermore, 268 (60%) survey respondents in Figure 69 gave the management at the GDH and related healthcare entities a poor rating for their effort to encourage employees to exchange information and knowledge to solve problems. According to the current study, the relationship between employees and management at the GDH or related healthcare entities seemed to be far too remote and did not seem to allow for a flow of information.

The findings of the study show that the employee and management relationship does not appear to be favourable to knowledge resource management at the GDH. This view is supported by Vimba *et al.* (2013), who state that, if leadership tasks are carried out inefficiently, with total disregard for the employees of the organisation, organisational KM strategy is likely to suffer and related activities are unlikely to succeed. Leadership at the GDH are seen to be neither steering the change effort nor conveying the importance of KM to employees, nor even maintaining the employees' morale or creating a culture that promotes knowledge creation/acquisition and knowledge-sharing/transfer.

In essence, the leadership at the GDH was not able to establish the necessary conditions for effective KM. There seems to be no particular understanding or

enthusiasm among the leadership, nor any inclination to inculcate a KM culture of acknowledging all the elements of knowledge. Consequently, the leadership at the GDH should understand and promote the kind of social structure within the GDH that could take responsibility for fostering learning, developing competencies and managing knowledge application. This suggests the need for strong leadership as a key facilitator in the use of knowledge. There is no “strong and visible leadership” support provided at a sufficiently high level to motivate the employees to apply and use knowledge.

### 6.3.10. Structural Equation Model

The study investigated whether the relationships between each KM capability dimension with the OP and HSD is present or absent. The results from the quantitative analyses were used to explain the arguments. Owing to the key role of KM capability (knowledge infrastructure capability and knowledge process capability) in the improvement of OP and HSD, a large number of theoretical and empirical studies on KM capability have been conducted across a wide range of contexts. In this study, the influence of KM capability dimensions in the OP and HSD by the GDH was investigated. The model investigated was the knowledge-based OP and HSD model (Figure 14 in Section 2.10) of KM capability in relationship to OP and service delivery.

Based on theoretical considerations, the results of the SEM showed the links among the constructs of knowledge process and knowledge infrastructure capabilities were positively and significantly related to OP and HSD. The structural model fit in Figure 70 summarises the various structural regressions of the KM model. The path coefficients, as illustrated on the lines, are the standardised regression coefficients. It is important to notice that all the relationships between the latent variables in the model are positive except one. The findings tend to validate and accept 2 of the 3 hypotheses established in the conceptual framework.

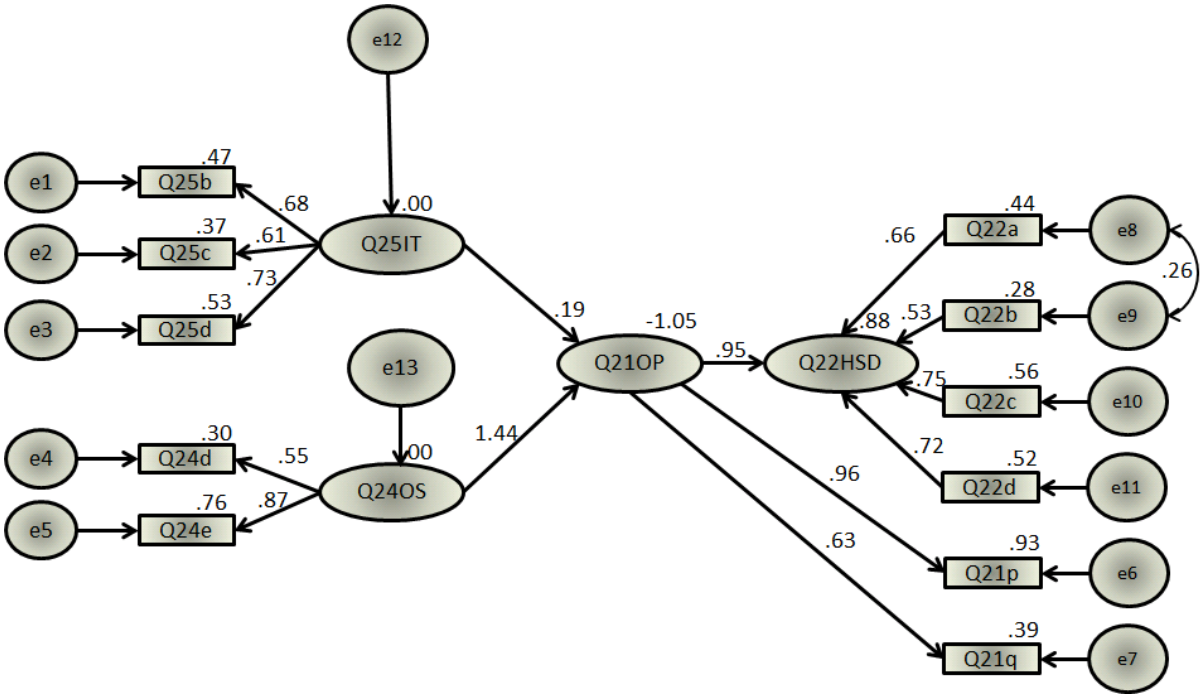


Figure 70: The structural equation model

The relationships between knowledge process capabilities and OP and HSD are also positive and significant. In terms of OC, the iteration limit was reached and thus, a solution could not be reached and Hypothesis H3 could not be tested. The SEM was then fitted to the data using the results of the confirmatory analysis and the resultant model is shown in Figure 70.

The model resulted in knowledge process capabilities being excluded. This did not impact significantly on OP. The factor loadings were too low, indicating the necessity for increasing the levels of knowledge acquisition/creation, sharing/transfer, retention/storage and application/usage within the organisation and also the levels of OP in terms of association. The levels of OP were also too low, as only one aspect had an agreement level above 50% and there was no significant pattern across the items. Accordingly, high levels of knowledge process capability are associated with high levels of organisation performance.

However, the knowledge infrastructure capabilities were seen to be contributing significantly to the model. As mentioned previously, only the aspect of OC was dropped from the analysis. The results showed that information technology and OS,

significantly impacts on OP. OP also significantly and positively impacts on HSD. The final model resulted in the healthcare delivery system being the model of knowledge infrastructure capabilities (information technology and OS) and OP and healthcare services delivery.

### 6.3.11. Conclusion of the research findings

The aim of the study was to investigate the use of KM practices to improve OP and HSD in the GDH. The study also sought to investigate and recommend the KM practices that could be adopted by the GDH to create/acquire, share/transfer, retain/store and apply/use knowledge to effect the public-sector reform initiatives, thereby improving HSD. KM was investigated for its possible application in the GDH.

In this section, is provided, the conclusion based on the findings of both the quantitative and qualitative analyses in addressing the study's research questions.

Bryman and Bell (2015) asserted that the value of any scientific study should be reflected in the conclusions and recommendations and must be contextualised in terms of the research problems and research questions on which the study was based. This view is supported by the suggestion from Robson (2011) that conclusions return to the research questions and spell out the implications of the findings as well as for the KM theory introduced in Chapter Two.

The purpose of this section is therefore to draw the study to an end by presenting the research conclusions derived from both the literature review and the empirical research findings drawn according to the order in which the research questions were stated in Chapter One. In drawing conclusions, only the major findings that directly addressed the research questions were discussed.

In addressing the research questions, this study has confirmed that a sample drawn from the GDH employees demonstrated two dimensions (knowledge infrastructure capabilities and knowledge process capabilities) that were identified in the literature. This means that the process and practices of KM activities in the sample of GDH

employees involved elements of information technology, OS and culture and knowledge creation/acquisition, sharing/transfer, retention/storage and application/use. This study supports the concept of the multidimensional nature of KM capability and that each dimension of KM capability can vary independently as they did in the study.

The study also established that the current use of the GDH knowledge resources was still low. Judging by the research findings, there were indications that the GDH was facing KM concept challenges that included:

- The general confusion among senior managers and general staff about the difference between information and knowledge;

- Inadequate understanding among the GDH staff of what KM means;

- Lack of KM policies and strategies for establishing an appropriate environment for KM;

- The lack of a good knowledge-enabling environment and culture to implement KM activities and encourage staff to be bold, build trust among themselves and create a co-operative work environment. The GDH culture is highly politicised, so a face-to-face exchange was a challenge;

- There was poor communication on business strategy as far as all the staff members were concerned. This included those inside and across the departments, in the regional healthcare entities and hospitals. The plan was intended to integrate the organisation’s vision, mission, goals, policies and action into a coherent whole;

- The lack of clearly-defined key performance objectives, performance output targets, poor communication of key objectives, unrealistic and unattainable objectives and lack of consultation indicate that there is no apparent alignment between organisational strategy and OP management in the GDH;

- There is a lack of appropriate ICT infrastructure to support KM (i.e. central knowledge repository or database) for storage and access to knowledge that led to scattered information in several locations; and

- Hierarchical OSs and lack of inclusive and participatory management styles to facilitate the generation and transfer of knowledge to improve the knowledge employees' work.

The findings showed that, in order to create favourable conditions for learning and employee interaction to allow KM practices to succeed, it was imperative for the GDH, which is itself, by definition, a knowledge-based organisation, to conceptualize a less hierarchical and less protocol-driven OS and to opt for a team-based and process-driven organisation

It was also established that, owing to its relatively poor performance management system and its weak incentive and reward mechanisms and performance recognition programs, the GDH may be faced with the more intense problem of the shortage of knowledge employees and their expertise. Abreast to this, the GDH should establish knowledge-related guidelines or policies for both itself and for the public-sector.

Finally, not much research has been conducted systematically on KM in the government context, so the KM mission becomes relatively more difficult for government departments. The findings made it clear that other barriers are the lack of support from top management, the absence of an appropriate performance management mechanism in place, difficulty in capturing and sharing people's tacit knowledge and too great an emphasis on technology.

Having examined the findings presented in Chapter Four and Chapter Five, as well as the discussions of the research findings in this chapter and in the light of the research questions, the overall conclusion is that there is no knowledge or evidence of KM being practised at the GDH. There is neither a suitable OS nor a suitable organisational environment for practising KM. The survey respondents and interview participants,

certainly recognise the value of and the need for KM but they themselves identified the many weaknesses and challenges listed above.

Furthermore, as illustrated in Figure 74 in 6.3.10, based on the findings of the conceptual model of the research and structural equation modelling, we concluded that there is a strong positive and significant relationship between knowledge infrastructure and OP and an equally strong relationship between OP and HSD. The paths between KM infrastructure capabilities and knowledge effectiveness are positive and significant. Hence, it can be concluded that infrastructure capabilities that constitute OC, OS and information technology play an important role in improving organisation performance mainly resulting in improved HSD. Thus, KM processes implementation would impact KM effectiveness significantly at the GDH.

## 6.4. Recommendations

Colomo-Palacios *et al.* (2014) and Ioannidis (2014) advocate that the recommendations be compared to a vision that provides tomorrow's solutions to today's problems. This implies that the value of any research project is contained in the recommendations or proposals advocated by the researcher. Those recommendations must be packaged in such a way that they show clearly how the new information has been able to add value to the advancement of knowledge in that particular research field (Ioannidis, 2014) in line with what was discussed in Section 1.5.

KM, as stated in Chapter Two, is about people as much as it is about systems. The study found that it would possibly be difficult to implement KM without more specific training and education programs in KM. The findings identified serious disparities and contradictions between beliefs and the actual praxes of KM. To introduce, nurture and sustain KM might require total commitment from leadership, the establishment of KM policies and guidelines, acknowledgement of a management office and an appointed specialist knowledge manager who could make up a KM team or CoP across the various departments of the GDH, the regional healthcare entities and the hospitals.

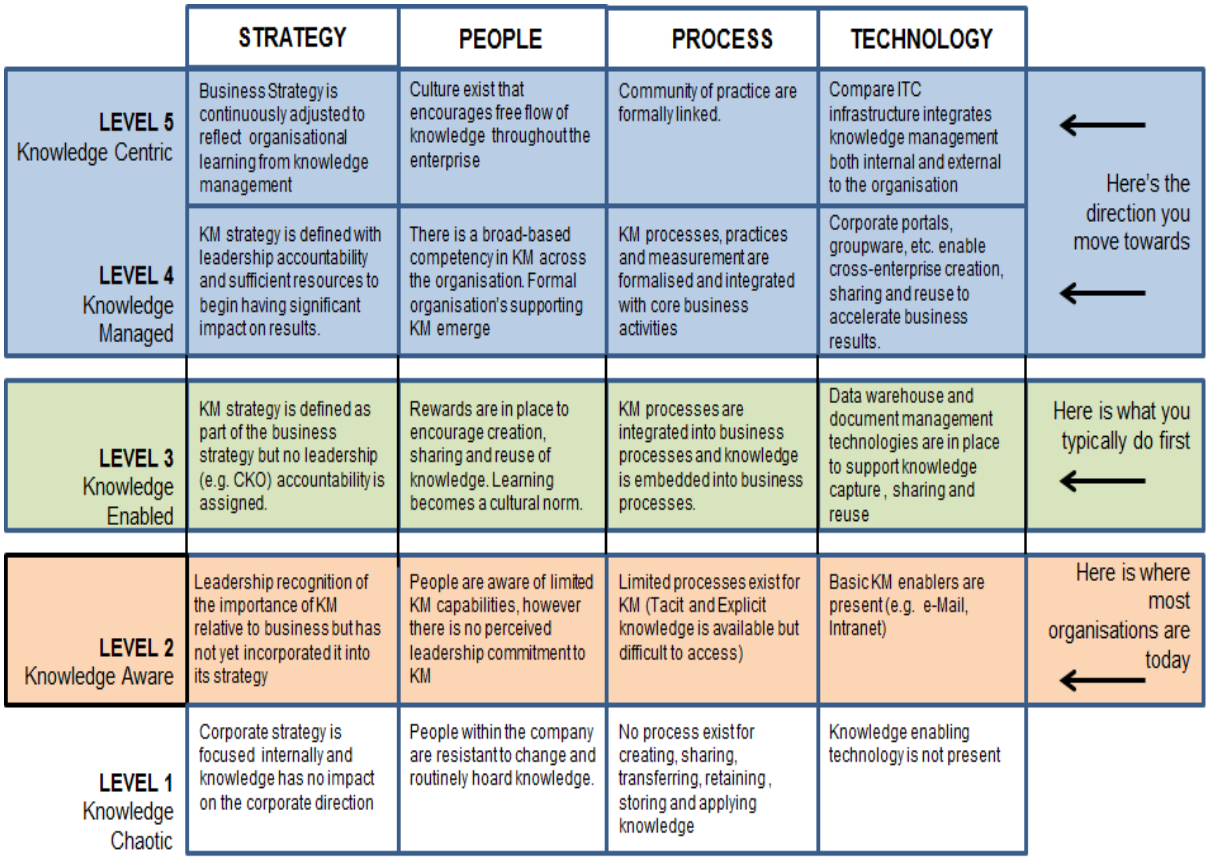


Figure 71: Business Model for KM

Source: Adapted from Frid's KM Maturity Model (Frid, 2003)

The researcher's recommendations are based on the view that, in order to transform the GDH from a 'knowledge chaotic' level to a 'knowledge-centric' one, the exercise should be backed with a proven model to be successful, as depicted in Figure 71. The model takes a business-orientated approach to managing knowledge. It dynamically approaches KM within the context of business and shows the organisation that KM can be both predictive and proactive.

The model is referred to as the 'knowledge journey' (Figure 71) which consists of knowledge growth activities from knowledge chaotic level to the knowledge centric level. An organisation is knowledge chaotic in the sense that it does not demonstrate the relationship between the importance of KM and the achievement of the organisational goals contained in the organisational strategy. Employees are resistant to the concept of KM and there are neither processes nor technology to support KM.

An organisation is knowledge-centric when KM procedures are an integral part of the organisation and individual processes and the value of knowledge is reported to stakeholders. This is an organisation with a KM culture, established and formally linked KM community of practice and a fully integrated ICT infrastructure that supports KM.

Knowledge-aware level organisation's leadership is aware and has implemented KM across the organisation but may not be uniform, though pilot projects are in place in some areas. This is the situation where KM has not been defined on the overall organisational strategy. The employees understand and are aware of the limited capabilities and processes of knowledge and the organisation has limited ICT capabilities, like e-mail and intranet.

Knowledge enabled level organisations have a defined KM strategy but no leadership accountability is assigned. KM processes are embedded in the business processes and rewards and recognition programs are in place to reward knowledge creation, sharing and re-use. The centralised knowledge repository is in place to support knowledge storage and retention.

Lastly, the knowledge managed level organisation uses KM procedures and tools and it is recognised that KM brings some benefit to the business. In these organisations there is a broad-based implementation of KM across the organisation and KM processes and measurements are formalised and integrated with business activities supported by established ICT infrastructure.

Ideally, the place for the GDH could be the blending of a well-managed interaction of resource environment of three main elements to represent organisational strategy: people, process and technology, which are the key areas of the organisation. The employees in the GDH could acquire relevant knowledge while also participating in creating, sharing, storing and applying knowledge.

Therefore, arising from the implications of the research findings and conclusions, as highlighted in Section 6.3 and in order to improve the level of OP and enhance the quality of healthcare service delivered by the GDH, the researcher makes the following

recommendations to address the KM challenges and weaknesses identified by the study. The recommendations made address each of the research questions and dimensions in the study.

### 6.4.1. Research Question 1 - recommendations

> This concerns the employees at all levels and categories of employment in the GDH and related healthcare facilities and public-sector entities and their understanding of KM.

It appears that an urgent need exists to market the concept to senior management at the GDH in order to ensure a general and mutual understanding of the concept. Senior management in the department should understand the KM concept and its principles so that the implicit KM practices can be recognised and formalised.

While the researcher noted the low levels of the understanding of KM in the GDH and related healthcare entities, this did not suggest that there were no KM activities in some form or another in the research entities. Though the GDH did not appear to implement KM explicitly, some KM-related practices have been observed at the GDH.

The question then arises: does the lack of a KM strategy, policy and guidelines mean no implementation of KM? The answer is ‘no’. This is because KM is a relatively new concept in the GDH and is often misconstrued to mean IT. It has already been highlighted in the literature that it is typical of organisations with immature KM to implicitly implement KM. These are organisations in Level 1 – Chaotic knowledge (Figure 71).

The GDH has a series of business improvement-related practices which generally yield outcomes similar to those of KM. KM-related practices are, by nature, integral to the daily activities in an organisation.

The researcher recommends that:

- In order to ensure a solid foundation for a formalised KM initiative in the GDH, everyday knowledge-orientated activities should be formalised and enhanced. This confirms that KM-related practices could be considered the roots for a formalised KM approach in the research entities.

- Senior management at the GDH should find the best way forward to enhance the quality of healthcare services delivery as KM practitioners. The use of the information communication platforms, such as the Intranet, Internet and interactive communication channels: blogs, encyclopaedias, Facebook and Twitter, could improve the understanding and importance of the concept of KM.

- Senior management at the GDH should develop KM platforms, knowledge portals and training centres and COP's where KM principles are imparted.

- All organisational knowledge should be stored in a centralised knowledge repository and should, to ensure integrity, be subjected to tests and evaluations.

- Good KM requires rapid feedback on opportunities and challenges, successes and failures from the field, as well as keen observational skills and a range of mechanisms with which to capture and assess information. The GDH ought to put mechanisms in place for capturing on-going flows of information that develop to include phone calls, field visits, staff exchanges, ad hoc rapid assessments and targeted evaluations.

- The leadership and senior management at the GDH should keep in mind the big picture and future business vision and the global strategic vision but should tackle small things, one at a time, in this bigger jigsaw puzzle. That is how progress is made.

- The GDH should ensure close partnerships between the knowledge champions and the business units but could start small and grow. This means

working on a variety of small projects with different units. Small projects with tangible outcomes help to create goodwill and trust. This creates more willingness to explore innovative ways of doing things with the knowledge champions.

- The GDH should inculcate a general awareness in both the employees and the senior managers of the importance of managing knowledge.

- The leadership and senior managers at the GDH should be ambassadors of KM; they should encourage their employees to share their knowledge, to transfer it to others and to store their knowledge in a shared knowledge repository whenever possible.

- The GDH leadership should develop infinite patience, as understanding KM will demand cultural change, which will take time. It might also take time for the business to see an increased return on the investment made.

- Above all, if the employees are to be knowledgeable, they must be allowed to experiment (obviously not to the detriment of the business), in order to learn from failure. Employees should not be afraid of making mistakes but should be encouraged to share the lessons learned in order to avoid repeating mistakes.

### 6.4.2. Research Question 2 - recommendations

This concerns the alignment of KM strategies and practices with the GDH strategies and operational objectives.

The need to align KM strategy and practices with business strategy and objectives was identified as critical to the success of KM (Oluikpe, 2012). Owing to its ability to deliver organisations strategic results relating to OP and service delivery, KM has generated considerable interest in organisations. Much of its appeal for organisations stems from its positioning as a business strategy that provides competitive advantage.

However, KM strategy is faced with the same challenges as those for organisational strategy. KM strategic planning is the deployment of the overall vision, mission and strategic objectives to the organisation's business units in order to link individual efforts and accomplishments to overall business objectives. Another challenge is the measurement of OP using key performance indicators. This implies that organisations need to find a manner to cascade high-level strategic objectives and interpret these to the lowest level units and job roles and also find a method to measure their achievement (performance) relative to milestones.

The foregoing implies that effective strategic KM planning plugs itself into the business process. In the same vein, knowledge in an organisation should be aligned to its business process. The argument is that business processes are implicitly bound to the organisation's business strategy.

While the researcher noted that the organisational document stated that the GDH KM strategies need to be explicitly formulated and measured according to the GDH's business strategies and objectives, the findings of the study revealed that the department has made it a business imperative to improve information and KM and managerial decision-making supportive of the GDH business strategies and operational plans.

The researcher recommends that a KM strategy should:

- Create an understanding of the organisation's knowledge resources and where they reside.

- Articulate the role of knowledge in value creation.

- Develop a number of integrated projects or activities phased over time, including quick-wins and long-term benefits (Du Plessis, 2007).

- Understand and apply KM to business strategy to increase knowledge flows that would leverage the organisation's core capabilities. It is inadequate to merely realise the need for KM to align with business strategy down to the

business process but it is vital for the GDH to have a logical and comprehensive architecture for specifying the various components of an organisation's knowledge domain and setting these knowledge targets.

- Create an effective operating culture—one in which questions and adjusting activities based on directed learning are encouraged. This entails finding the right balance between providing strategy and ensuring there is enough flexibility and ownership for teams to take informed action.

- Align organisational strategy with KM and make this part of everyone's job. To achieve organisational objectives, better information leads to better decisions at all levels where information could be collected on a continuous basis by all the members of staff. This good practice could be supported by both structured business processes which would include strategies to remind the staff of the importance of sharing and transferring knowledge and by an open operating culture, which values and promotes targeted sharing and learning for improved OP.

- Allow for knowledge-sharing strategy in different ways (in addition to reporting). Written reports are important and useful but they capture only some of the wealth of information and implicit knowledge from the team and are ultimately limited to the writing skills and interests of the staff and the incentives created by senior management. Other approaches, tools or methods might capture unexpected and invaluable information that reporting omits.

- Reward knowledge-sharing. Regarding information acquisition, sharing, retention and use, strong KM practices will evolve as the team learns what works and what does not work. Introduce small incentives to encourage the team to share information that they may otherwise feel unable to do.

- Be patient, persistent and consistent. Strong learning and the alignment of KM with business strategies takes time to develop. The employees would probably

take time to learn innovative ways of operating, while the strategy may need to introduce a number of different tactics to help them along the way.

- Ensure effective communication and management messaging (the unwritten behaviour patterns that managers have that define what they really think is important) must be consistent. If they affirm, “learning is important” then they should be prepared to accompany their statement with support, time and funding. They should be persistent and ‘walk the talk’ (align what they say with their actions). Although this may initially require more management time and effort, the ultimate effect on the clarity of the vision, mission and objectives and commitment from the staff, not to mention that the impact on the organisational operating culture, would be dramatic and rewarding. The initial effort would generally translate into improved OP, greater efficiency and decreased staff turnover, thereby saving time to focus on achieving satisfactory results.

### 6.4.3. Research Question 3 - recommendations

This concerns the KM used by employees in the GDH, given the demands of public-sector reform to improve OP and service delivery.

The literature review in Chapter Two discussed at length the issue of public-sector reform. It is about strengthening the way in which the public-sector is managed (Mele & Ongaro, 2014). The public-sector may be overextended, *id est*, attempting to do too much with too few resources. It may be poorly organised; its decision-making processes may be irrational; staff may be mismanaged; accountability may be weak; public programs may be poorly designed and public services poorly delivered. The public-sector reform is the attempt to fix all these problems.

KM is looking at determining the required information, through all the aspects of knowledge, for achieving the main objectives of the GDH, besides, collaterally, contributing to reaching the fundamental objectives of the public-sector reform through the ability to formulate strategies and make decisions, along with problem-solving.

The public-sector reform initiatives aimed at achieving fundamental public-sector service delivery objectives (Brinkerhoff & Brinkerhoff, 2015; Christensen & Lægreid, 2013) remain elusive to the GDH and the public alike. The study has shown that the OP and HSD at the GDH have declined by 20% over the period from 2004 to date. As it attempts to improve the livelihoods of its citizens around the province, if more rapid progress is to be made in the future, learning from success and failure would be crucial for the GDH.

The findings of the study demonstrate that the GDH is facing very serious problems of inefficiency, corruption and poor performance; with decayed and out-of-date infrastructure; with no effective internal and external communication and co-operation linkages; with multiple and overlapping programs and units, large numbers of employees only marginally motivated to do any work; and, with a multitude of reasonable explanations for their dysfunctional performance.

The researcher therefore recommends that the KM leaders in the GDH should address the objectives of public-sector reform to improve OP and health-service delivery through:

a) Building administrative capacity

The GDH should:

- Spread KM culture as an effective KM administrative tool for improving OP. The non-existence of moral and material incentives in the GDH is considered an obstacle when it comes to applying KM for public-sector reform.

- Provide specialised training programs for the KM field.

- Build the administrative capacity to address the poorly-managed information and knowledge and inefficiently-structured administration, training and skills upgrading in business units and related healthcare entities operating in the areas of healthcare delivery points.

- Undertake an organisational restructuring and renewal, including being more responsive to the needs and healthcare services preferences of the public.

- Strengthen the links between itself, the related regional healthcare agencies, the clinics and the hospitals.

- Build the capacity of its business units, the related regional healthcare agencies and hospitals to interact with one another through the centralised knowledge repository.

- Improve the quality of its HR through training and recruitment and addressing management problems related to employee performance management, performance incentives and non-wage incentives, coaching, mentoring and job rotation.

b) Strengthen its KM capacity, either at the regional healthcare centre level or at the level of individual business units, to develop rational and effective KM policies that include rationalising and standardising the decision-making process, improving the flow of policy-relevant knowledge and strengthening its capacity for policy-analysis.

c) Implement institutional reform for its business processes with measures aimed at making the GDH more transparent, with conduct that is accountable and strengthened safeguards for GDH procurement, thereby strengthening the GDH KM procedures and guidelines, which act as an accountability check on the use of KM and access to knowledge.

d) Change the management program for leadership to build internal support for change and reduce resistance to it through widespread participation in the change process and other means. Additionally, in order to overcome resistance to change, leadership should ensure widespread participation in the change process.

e) Downsize fiscal discipline, reduce the costs of healthcare administration and service delivery and encourage a desire to move towards a more knowledge-orientated economy.

f) Increase investment in IT, which has been included as one of the key enablers of KM and a key strategic tool for public-service reforms. It is now seen as an essential facilitator of knowledge acquisition, sharing, transfer and usage in service improvement, particularly when the GDH is experiencing the increasing trend towards knowledge-based production and the communications' revolution.

### 6.4.4. Research Question 4 - recommendations

This question concerns KM practices and a collaborative working environment at the GDH.

#### 6.4.4.1. Recommendation: Knowledge creation/acquisition

The organisational capability to create and share knowledge is the most important source of an organisation's sustainable competitive advantage. The GDH operates in all the areas of the public health system through people and it is their contribution that determines success. It is, in addition, their skills and knowledge that have to be cultivated and then leveraged to create knowledge and competitive advantage.

As discussed in Chapter Two, Nonaka & Takeuchi (1995) propose the SECI model.

It was further established that organisational knowledge creation is the process of making available and amplifying knowledge created by individuals as well as crystallising and connecting it with an organisation's knowledge system. In other words, what employees acquire in their work benefits their colleagues and, eventually, the wider organisation.

From the findings of the study and the conclusion in Section 6.3.4.1, at first glance, the lack of knowledge creation policies and the fragility inherent in the GDH knowledge creation is nothing but a serious obstacle to coherence, creativity and sharing.

The researcher therefore recommends that:

- The GDH should employ KM strategies effectively; it has to formulate and adjust them according to their knowledge creation processes or modes.

- The GDH culture fosters and maximises the departmental capability. In order to impact positively on the knowledge creation process, a successful culture will have to be seen to foster employee development and encourage highly competent employees to exercise their talent, to be engaged, challenged, motivated and rewarded in a positive way for their performance and contribution.

- The GDH establishes an organisational context that will develop leaders and also focus on facilitating teamwork.

- The GDH develops a shared mind-set which would enable the development of a unique identity for the department in the minds of the stakeholders and it is this shared mind-set which would be the enabler for the creation of knowledge.

- The GDH should capture the intellectual capital or tacit knowledge of its employees. Management should fully involve and engage the employees in the knowledge-creation activities of the department.

- In spite of the public-sector reforms that might be happening in the competitive environment, senior managers at the GDH constantly evaluate knowledge creation capabilities to see if they continue to add value to the department.

- The GDH should analyse the functional barriers and foster the development of cross-functional teams and structures that provide the opportunity for knowledge creation. The employees could pool their ideas to achieve even better and more creative knowledge for solutions to problems.

- The GDH should further examine the models and strategies that enable professionals to work collaboratively (*id est*, CoP) and ensure that their collaboration creates knowledge and generates positive results and influences on individuals, the department itself and, consequently, there should be an improvement in OP and HSD.

- The GDH should improve the performance evaluation criteria, censuring knowledge hoarders, rewarding effective knowledge creation and giving responsibility to managers to initiate. There is a need for the department to create a culture where creating and sharing knowledge is rewarded and encouraged.

#### 6.4.4.2. Recommendation: Knowledge-sharing/transfer

The literature has shown that organisations struggle with the need for an aggregate of knowledge known by individuals in their employment. Generally, this is knowledge that has been gained through effort realised for the business by the employees. In the service industry, this is often emergent knowledge which is discovered through work experience and is not always documented in general publications.

Knowledge is acquired by employees through work engagements, personal endeavour and training and development and is not always easily captured or shared with others. It is necessary for management to have access to this knowledge in order to make decisions that give an organisation the ability to respond to change, reduce the costs of redundant work and ultimately, remain competitive and improve OP. Employees need this knowledge to validate their work performance, remain innovative and ensure their productivity. If it is to be of optimal value to an organisation, knowledge must be accessible, shareable and transferable.

From the findings of the study and the conclusion in Section 6.3.4.2, it emerged that there is no policy on knowledge-sharing/transfer, nor does there exist an environment or culture of knowledge-sharing/transfer at the GDH. The researcher therefore, recommends that:

- In order to achieve the improved OP and the delivery of quality healthcare services, the GDH needs to ensure that knowledge-sharing/transfer happens in a culture of trust, understanding, support and openness and active encouragement. Cultures fundamentally exist because of differences. The GDH should find ways of facilitating the process of crossing the invisible borders of one culture to the next.

- The GDH needs a vision, mission and objectives directed to knowledge-sharing as the 'right thing to do', which will encourage individuals to participate.

- The GDH needs to consider how individuals could benefit personally when they plan for or teach how knowledge resources can be used. This is because employees share when they see a potential for personal gain.

- As this would ensure the use of a knowledge resource, the GDH should incorporate techniques for "sharing by role" within the department. For example, project leaders mandate contribution of project documentation, managers share weekly updates on accomplishments and company "spotlight" for employees' contributions. This is because employees share knowledge as an obligation of their role or to their employer.

- The GDH ought to define a knowledge-sharing program that would benefit and should demonstrate the value of shared knowledge when it is presented in a tangible form which employees can use. Shared knowledge resources can advertise the expected value of the resource to encourage use in the department. This is because the intended values gained from sharing

technical knowledge include a reciprocity and re-use capability, increased productivity by enabling innovation and the reduction of their workload.

- Because value comes from sharing both successful and unsuccessful work in a knowledge resource, the GDH should implement consistent business processes that capture all the outcomes and ensure the retention of departmental history and information integrity.

- The GDH should define business processes and mandate them for use.

- The GDH should ensure knowledge use by implementing business processes at all the levels of employee participation because the employees' roles contribute to how knowledge resources will be applied.

- The GDH should define access mechanisms to ensure that knowledge is delivered, depending on the recipient, as this may require access restriction and filtering. This is because the intended recipients' impact on shared knowledge.

- The GDH should define the knowledge-sharing process, which requires human interaction to denote knowledge from information, because sharing knowledge is not the same as sharing documented information.

- The GDH should create a knowledge-sharing environment to enable employees to share knowledge. This is because the environment, as well as the location and style of interaction impact on the knowledge-sharing

- The GDH should install the necessary knowledge-sharing applications, because knowledge contributors need certainty when it comes to the quality and accuracy of the knowledge that they are sharing.

- As the spread of knowledge information necessitates control, the GDH should create a mechanism that would ensure that knowledge contributors would be

able to control the knowledge they are contributing, including making changes to content.

- Because knowledge contributions vary according to who is accessing the knowledge that they share, the GDH should provide access control of the knowledge content. In other words, the employees want to know who will be accessing the information.

- The GDH should minimise or eliminate internal competition, as corporate knowledge resources cannot be built if internal competition is encouraged, thereby creating an impediment to knowledge-sharing.

- The GDH should include sensitivity training and differing communication styles and expectations for interaction because the ascendency of differences in distance influence knowledge-sharing between differing cultural, gender and supervisor subordinate relationships.

- When defining knowledge-sharing policies, it is necessary for the GDH, to use terms that are clearly understood by all the employees and to avoid colloquialisms and jargon. Language can be a barrier in an environment as diverse and multi-cultural as the GDH.

- The GDH should consider institutional logic when dealing with organisational KM successes or failures. Organisations often fail to form a knowledge-sharing practice because their structures are incongruent with the practices for knowledge-sharing. For example, punishment for errors, individual-based recognition and award systems could be considered.

- The GDH OS should be revisited when it comes to the success of a knowledge-sharing practice. For example, the healthcare industry is a knowledge-intensive industry that could potentially benefit greatly from a knowledge-sharing practice based on a less hierarchical OS.

- The GDH should consider the external institutional pressures for the success of the departmental knowledge-sharing practices. If the logics of the external pressures and the benefits of knowledge-sharing in the department are congruent, it is highly likely that the GDH would comply with the external pressures and the knowledge-sharing practices would probably be successful.

- As far as the GDH regional healthcare entities and hospital leaders and managers are concerned, it is recommended that individuals' errors that are derived from faulty processes should be protected in order to create an environment in which employees safely discuss and report problems. It is further recommended that individual employees be recognised for contributing insightful knowledge that results in the increased quality of HSD and patient safety.

#### 6.4.4.3. Recommendation: Knowledge-retention/storage

The literature and the findings of this study have demonstrated that organisations have realised that, in the absence of knowledge retention policies, guidelines and practices, they stand to lose their valuable intellectual capital and organisational memory. The loss of organisational knowledge is detrimental to OP and service delivery. If such knowledge is not managed and retained, such an organisation stands to lose the knowledge acquired over time.

The study findings have identified several knowledge loss drivers, which necessitated the retention of organisational knowledge if it was to remain viable in the knowledge economy and in the face of public-sector reform. The study results have established that there was a lack of training and development, succession planning, job orientation, a central knowledge repository, coaching, mentoring and CoP. To this end, the recommendations below are based on the need to assist the GDH maintain its organisational memory and improve the OP and HSD.

The GDH should:

- Understand its workforce profile and demographics (employees nearing retirement age, natural attrition, resignations, deaths, new entrants into the workplace) and put in place a management tool for continuous assessment of the health status of its organisational knowledge base.

- Define knowledge retention policies and guidelines to enhance knowledge retention at the GDH with a very clear and specific vision and objectives, knowledge retention drivers and relevant knowledge types to be retained.

- Develop a model to capture and transfer all the forms of tacit knowledge as part of effective succession planning in the administrative function of HSD

- Create an environment and culture based on trust and open communication because the two have a critical role in the transfer of tacit knowledge; consequently, there would be support for the successful integration of tacit knowledge retention in succession planning.

- The GDH executive leadership team should create an understanding of tacit knowledge and endorse its importance. The executive leaders must be thoroughly informed of the conceptual elements of tacit knowledge. They should agree on the importance of these elements, comprehend and accept the crucial role of tacit knowledge throughout the department and agree on the need to formally integrate tacit knowledge retention with succession planning.

- The GDH executive leadership team should be directly involved in communicating the importance of knowledge retention to every employee in the department. As part of this communication, leaders should also indicate their intention to be directly involved in training the organisation on how to integrate knowledge retention in succession planning.

- Provide training and development on tacit knowledge integration with succession planning. The GDH management should design and deliver

training on criteria for integrating knowledge retention in a succession process and performance management.

- Identify knowledge retention champions and appropriate succession planning participants for training in tacit knowledge transfer as part of succession planning. This exercise should also include a roll-out plan prioritising the deployment of tacit knowledge retention during succession planning in the department.

- Externalise and store the expressible tacit knowledge of key and knowledgeable employees. The important expressible tacit knowledge transfer is facilitated by selecting only key employees at each business unit and engaging them in institutionally supported steps designed to externalise and store expressible tacit knowledge of key job function.

- Use mentoring, coaching, storytelling, job orientation and shadowing, CoP and other subject matter experts to retain tacit knowledge. They need to use the outcomes to assist their efforts to retain tacit knowledge. GDH executives and managers will not succeed in accumulating knowledge without identifying a relationship of collective memory and the parallel relationship between mentoring and knowledge transfer (Fleig-Palmer & Schoorman, 2011). They should create formal mentoring programs to define goals, share ideas and be open to continuous feedback from mentors.

- Put in place a mechanism to capture inexpressible tacit knowledge using, as part of coaching, specific high-level activities, job orientation, job shadowing, succession planning, apprenticeship, CoP and mentoring, employing retirees and subject matter experts. Coaching, mentoring, job orientation, succession planning, apprenticeship, CoP and job shadowing are common methods of preparing successors during succession planning. All of these methods provide a context for inexpressible knowledge transfer.

- Enable computer networking, access to the internet/intranet, online social networking media and establishing online communities of practice (CoP).

- Pursue a personalisation strategy for KM which involves knowledge being closely associated to the person who developed it and then shared mainly through person-to-person contact. This strategy focuses on dialogue between individuals. In this case, knowledge is transferred in brainstorming sessions and one-on-one conversations. This involves the creation of CoP's, consisting of experts, in the workplace. Knowledge is shared, not only face-to-face but also through telephone conversations, e-mail, via video conferences and more.

- Increase the level of co-operation with other provincial health departments in the country. Collaboration leads to knowledge creation, knowledge-sharing and the retention of critical knowledge which the GDH may need for future use.

#### 6.4.4.4. Recommendation: Knowledge application/use

The study findings and the literature have demonstrated that there is a positive relationship between knowledge application and OP (Bhatti, Zaheer & Rehman, 2011). In fact, Pfeffer and Sutton (2013) conclude in their study that knowledge application is the sole factor amongst KM processes which affects the OP. The study findings, which are also supported by Emadzadeh *et al.* (2012), show that, by applying KM, organisations can select relevant information to produce high-levels of quality service delivery, compare them with other methods and subsequently select more useful strategies for gaining the highest OP. The researcher therefore, recommends that the GDH should:

- Design a KM and information management system to identify the trends and best practices in the HSD market and, by the internal mechanisms of the department, transfer them to the knowledge repository. This would help

managers and employees arrive at their decisions by considering several dimensions of the market, thereby gaining competitive advantage.

- Form relationships with research and counselling centres in the public HS to outsource the research services. This would enable managers to gain knowledge and information used in the healthcare industry permitting them to fully concentrate on their OP.

- Design a customer database which facilitates the possibility of maintaining customers' information in order to customise the healthcare services and acquire their knowledge and ideas, thereby creating competitive advantage.

- Set up a feedback system, business intelligence technology and documentation of people's knowledge and experience and act in comprehensive support of creative and innovative people. This would enable the department to differentiate itself from competitors by applying knowledge.

- Implement a proper access security mechanism and define file names, username and password for each departmental user to share information. This plays an important role in preventing the theft of vital organisational information and protects the organisation's knowledge.

- Level the ground for the implementation of KM by creating a participatory culture that shares and applies knowledge and practises group work. The knowledge-sharing culture in the organisation is considered one of the most important factors for the implementation of KM (Al-Bahussin & El-garaihy, 2013; Kagaari, 2011). An appropriate OC could lead to favourable individual and organisational outcomes, OP and service delivery (Al-Bahussin & El-garaihy, 2013).

- Facilitate the sharing and application of knowledge, by flattening the OS and easing the interpersonal communications so that employees could communicate with each other rapidly and timeously. For this purpose, the reviewing and amendment of troublesome and problematic rules and

regulations for the interpersonal communication process, knowledge-sharing and detection of knowledge workers could be very influential.

- Pay close attention to knowledge application and knowledge-sharing. The study showed that the department is using various aspects of knowledge-sharing as a metric of KM practices. While knowledge-sharing is certainly important, as discussed in Section 6.3.4.2 (particularly as an antecedent of knowledge application), knowledge-sharing alone cannot improve team performance: the shared knowledge must be effectively applied (Choi *et al.,* 2010).

- Develop the required training for the use of IT and reinforce its application, especially in knowledge-sharing and application practices. IT is considered to be the fundamental factor for KM success, particularly, because it contributes to the facilitation of KM processes in organisations.

- Carefully invest in information communication and technology. ICT support has a positive impact on knowledge-sharing and knowledge application. Furthermore, knowledge-sharing has a positive impact on knowledge application, which in turn has a direct impact on team performance. The department could improve team members' meta-knowledge of "who knows what".

### 6.4.5. Information technology - recommendations

We have witnessed an explosion of IT solutions claiming to provide support for KM. The literature has confirmed in many studies how systems and technology intended for information, such as the intranet and social media, can assist in the managing of knowledge. It is thus obvious that computers are very good at handling and processing data. The transformation of data management into information management also went rather smoothly since computers also lend themselves well to information systems. However, when we now try to cross the border and go into KM issues become more complicated.

The study by Mao *et al.* (2015) on the role of IT resource on KM capability demonstrates that KM capability functions as a mediator between the effects of IT infrastructure on OP. Moreover, the quantitative results of CFA (Section 4.11) showed that the model fit indices satisfy the conditions of a good fit. In addition, for CFI, an IFI was 1.00 while the values for absolute fit indices were 1.00 for GFI (goodness-of-fit) and .000 for RMSEA (badness-of-fit). These results suggest that ICT impacts significantly on OP. For every increase of one unit in an ICT component, organisation performance concepts increase by .177. These results are complemented by the qualitative findings in Section 5.6.1, which corroborate the view that the use of ICT plays a critical role in improving OP and healthcare service.

The researcher recommends that:

- The GDH should invest in and increase the allocation of resources in Information Communication Technologies. ICT is a growing activity that has significantly augmented the participation by employees in KM activities in the department. ICT holds incremental improvement, including an increased access to available knowledge and information at the GDH.

- The GDH should invest seriously in ICT infrastructure and applications. The study results and the literature have shown that ITC has an indirect but positive effect on KM adoption through OC, OS, leadership, climate and collaboration and elements (Rasula *et al.,* 2012). The codification of knowledge in information systems and knowledge repositories does not guarantee efficient KM but has the potential to influence it in a positive way. It is important to note that ICT does not have a direct influence on knowledge but has an indirect effect, on it, as an enabler of a better collaboration among people in the organisation, motivation of people and the process view of the organisation.

- The GDH needs more strategic ICT planning in the department and related healthcare entities to link this to the overall business objectives and KM strategies.

- The GDH should deploy a targeted ICT training relevant to the GDH's training and development programs. ICT systems help employees to design, organise and develop their own work activities and also to communicate knowledge to each other more efficiently. The ICT systems should be rooted in and guided by an understanding of the nature and types of organisational knowledge. ICT systems could enhance knowledge assimilation and application by facilitating the capture and accessibility as well as updating the documented information of organisational directives. ICT systems could also help the application of knowledge by codifying and automating organisational KM routines. Making ICT available also to employees is vital to improving on the flow of information in the organisation.

- The GDH should ensure that employees have access to all the departmental ICTs (computers, telephones, cell phones, electronic bulletins, groupware, knowledge directories and central knowledge repository) in the department to facilitate the capture, transfer and retention of critical and useful tacit and explicit organisational knowledge in various business units.

- The GDH should facilitate the acquisition of ICT that enables KM. ICT has been identified in the study as one of the enablers for knowledge creation/acquisition, transfer/sharing, retention/storage and application/use, where almost every job is dependent on ICT facilities.

- When facilitating KM initiatives, IT environments such as the intranets may be utilised to establish a virtual meeting place where CoP can engage in dialogue and collaboration. Actions such as knowledge acquisition/creation, knowledge-sharing/transfer and knowledge application/use can be successfully performed in these environments.

### 6.4.6. Organisational Culture - recommendations

Every organisation has a unique OC. This is because unique individuals work in these organisations and constitute the unique culture of their particular organisation. Because all OCs differ, a number of programs in the organisations such as KM are also uniquely impacted.

The study findings showed that the employees were rather ambivalent about the difference between knowledge and information and were undecided about the GDH KM strategy. Even if the strategy existed, the employees were not clearly aware of it. This statement can be supported by the fact that no policy statement or guidelines of KM strategy could be located in organisational documents or the departmental website.

The availability of KM strategy, policies and guidelines has a critical influence on KM as an OC serving the orientation of all the actions in the department (Coleman, 2014; Oluikpe, 2012; Pallas *et al.,* 2012). Executive managers, senior managers and employees commonly align their actions along this strategy.

The researcher therefore, recommends that the key principles or practices that should be reflected upon in the overall OC (adapted from De Long & Fahey, 2000) which, in turn, support and encourage KM:

- In formulating the KM strategy and the implementation plan, the GDH should explore how the GDH OC priorities are likely to support or undermine more effective KM.

- Identify behaviours that would demonstrate that a particular set of essential knowledge creation or knowledge-sharing activities are critical for the department.

- Clarify which exiting norms and practices may be barriers to the new behaviour (knowledge-based) and ask whether those elements of the OC could be changed to support KM.

- Consider how the envisaged KM strategy proactively intends to change attitudes towards the ownership of knowledge.

- Evaluate how the current OC will facilitate or undermine the proposed strategy for knowledge-sharing, transfer and distribution.
- Make the strategy more obvious to everyone.

- Identify new behaviours that executive and senior managers need to exhibit in order to communicate a switch from valuing individual knowledge to preferring collective knowledge.

- Make employees feel as though they have a voice in the decision-making process.

- Make explicit the practices that ought to change to reinforce more collaborative knowledge creation/acquisition, sharing/transfer, retention/storing and application/use.

- Identify and eliminate the norms and practices in the current OC that are barriers to discussing sensitive topics.

- Find and evaluate evidence that suggests that leadership at the GDH is perceived to be accessible and approachable. Are there elements of the culture that inhibit vertical interaction?

- Identify the cultural norms and practices in the department that encourage or discourage a high frequency of interaction, an expectation of collaborative problem-solving, searching for existing expertise and knowledge instead of ‘reinventing the wheel’, teaching others and identifying and learning from mistakes and accepting accountability.

- Ensure that employees in every section who have the same duties frequently meet. Those meetings should be used to exchange experiences, discuss changes in the healthcare legislations and debate best practice techniques.

- Create an open OC by developing the CoP at the departmental level, at regional healthcare entities level and hospitals level and, through this, cultivate an inter-serviceable exchange.
- Identify the organisational norms and practices that create barriers to adopting, creating or applying the important new knowledge and information that were previously ignored, discounted or undiscovered by the department.

- Seek out examples of new knowledge adopted or created with inputs from external environments that led to surges of innovation and creativity in the department and, from this, try to draw lessons.

- Identify the norms and practices in the current OC that discouraged employees from building on and extending structured knowledge acquired from the external environment.

- Find examples in which intense debate and dialogue were encouraged on key strategic issues. Reflect on how conflict played a constructive or destructive role in those discussions. What organisational norms and practices would support more constructive confrontations?

- Look at evidence about the levels of participation in both acquiring and challenging knowledge that is critical to the department's business. How do the department's organisational norms and practices encourage or inhibit high levels of participation in this area?

- Seek out examples showing how the department questions its fundamental assumptions, beliefs and projections about the competitive environment, core technologies and the OC itself. What organisational norms and practices would be needed to support more productive questioning in this area?

### 6.4.7. Organisational Structure - recommendations

The OS is defined in the literature as the levels of management and division of responsibilities within a business, which could be presented in an organisational chart.

The findings of the study showed that the OS can influence KM processes through shaping patterns and frequencies of communication among employees, stipulating locations of decision-making and affecting efficiency and effectiveness in implementing new ideas. (Ajagbe *et al.,* 2015) argue that KM can carry over the structural impact into organisational effectiveness, because the way knowledge is organised, KM activities are coordinated and the extent to which KM practices are embedded in the daily work processes, influence the effectiveness and efficiency of OP and service delivery.

What also emerged from the study findings was the degree to which jobs in the department were standardised and the extent to which employees' behaviour was guided by rules and procedures. As demonstrated by responses from the questionnaire, there were explicit rules and procedures which were likely to impede the spontaneity and flexibility needed for internal innovation. The standardisation of these rules and procedures eliminated the possibility that employees could engage in alternative behaviours and removed the willingness to hold discussions.

From the study findings, as tasks are pre-programmed by the department, there is less need for the employees to discuss how work is done. The researcher recommends that the key principles or practices should be reflected upon in the overall OS, which, in turn, supports and encourages KM and improved OP.

These principles are:

- Leadership should critically analyse the effectiveness and efficiency of the organisation by ensuring that proper structures are assigned and implemented

with the aim of achieving KM objectives. The GDH should also endeavour to have well-structured mechanisms in order to achieve these objectives.

- It is critical that knowledge philosophy operates across all the levels of the GDH and is fully incorporated into well-publicised human resource practices throughout the entire department and its related regional healthcare facilities, including hospitals.

- Leadership should ensure that, across the department and related healthcare entities and hospitals, there is recognition of the strategic value of knowledge. To this end, the GDH should gain the employees' commitment to knowledge-sharing and transfer throughout the workplace.

- KM guidelines should help direct the employees' attention to the department's priorities by means of its clarification and communication of the standards, role expectations and rewards that are applied in the department. HR management practices which support this process should include the recruitment and selection of new staff, where the value of the position is reviewed; the performance management process, where an individual's contribution to KM is explored; and in the remuneration and recognition practices related to KM, where rewards and returns for KM outcomes are allotted. The GDH should additionally ensure that all the employees understand the importance of the knowledge agenda and the high priority that is placed on knowledge creation, sharing, retention and application.

- Policy planning and strategy formulation should, so they all have a similar structure and predefined section on KM, define the organisation of policy planning and strategy documents. Among the descriptions of the situation and desired results, the policy planning documents on KM have to clearly state the directions for action and tasks to reach the goals. These are the tasks that are later included in the KM strategies and action plans of the department: the tasks whose implementation is under the control of the knowledge leaders and tasks, on whose implementation the knowledge leaders prepare reports.

- Leadership should implement an e-Government Development Program guided by the overall RSA government e-Government policy (Kaisara & Pather, 2011). The overall objectives of the GDH e-Government program should be to consider the public first in transforming the HSD by implementing IT and optimising healthcare administration processes, thereby:

  a) Improving the quality and accessibility of healthcare services and decreasing the administrative and financial burden for citizens and businesses.

  b) Developing a more efficient and cheaper department - improvement of administration effectiveness and reduction of costs.

  c) Developing a more open and democratic HS – increase of society participation in the work of the GDH and related regional healthcare facilities and hospitals.

- Leadership should align their KM strategy with the National DoH Strategic Plan 2014/15 – 2018/19 (DoH, 2014), “Gauteng Health Turnaround Strategy, towards effective service delivery, strengthening primary healthcare and clean audit in 2014” (GDH, 2014; GDH, 2013; GDHSD, 2009), “National eHealth Strategy, South Africa 2012/2013 – 2016/2017” (DoH South Africa, 2012) and “National Health Insurance for South Africa, towards universal health coverage” DoH, 2015). The GDH KM strategy could be informed by a number of strategic and academic studies done by, among others, De la Porte (2016), McIntyre & Klugman (2016), Mayosi *et al.* (2014), Vambe (2014), Coleman (2014), Weeks (2014), Mayosi, Lawn, Van Niekerk, Bradshaw, Karim & Coovadia, (2012), CDE (2011) and Johnston and Spurrett (2011) to address the challenges of public HS in South Africa.

  The aim of the plan is to foster a judicious, effective and qualitative healthcare administration that ensures that the healthcare services delivery complies with

the needs of society. These include that the strategic policy planning is balanced according to available resources; accessible and high-quality healthcare services that correspond to the needs of society; compliance with the healthcare legislation in the activity of healthcare administration, guarantees of human rights and effective respect of these rights; professional, competent, motivated healthcare professionals; and the provision of ways in which civil society could participate.

### 6.4.8. Organisational Performance and HSD - recommendations

Organisations develop KM capabilities to help support a wide range of vital operational and innovative activities. The study results have shown that knowledge application or use is associated with people and behaviour and that organisations benefit when knowledge is shared and used in context and according to need (Moghaddam *et al.,* 2015; Emadzade *et al.,* 2012). KM is recognised as an important weapon for sustaining competitive advantage and improving OP and HSD (Al-Hakim & Hassan, 2013).

As a result of the study findings, as discussed in the Section 6.3.8, the outcome on OP and HSD at the GDH was bound to be very poor. All the identifiable inhibitors of KM for OP and HSD were observed:

- There was no alignment between organisational strategy and OP management and HSD in the GDH.
- The strategic goals were not properly communicated and the employees were uncertain of the department's strategic goals.
- There were no clearly-defined key performance objectives.
- There were no defined output targets.
- Communication of key objectives was poor.
- Objectives were unrealistic and unattainable; and
- There was no consultation.

Some of the inhibitors were that the GDH had no proper basic human resource practices in place to influence the productivity, skills development, attitudes and behaviour of its employees to do their work and to be assessed against set key performance indicators; the employees at the GDH were very unhappy, demotivated and uncommitted; and, the GDH had failed to retain skilled resources because there were no retention policies in place.

Based on these findings, the researcher recommends the following key factors that should be involved in implementing the KM concept to enhance OP which, in turn, would improve HSD:

- KM is an antecedent affecting OP. This signifies that more KM capability would bring about even more improved OP. Because KM is an important antecedent, executives and senior managers at the GDH should thoroughly. implement it. One of the findings of this study suggests that KM implementation is the ability of an organisation to acquire, convert and apply their knowledge.

- The findings of the study show that organisational learning (managerial commitment, ICT perspective, openness and experimentation and knowledge transfer and integration) mediates the relationship between KM and OP. Executives and senior managers at the GDH should take measures to develop organisational learning in order to link KM and OP, for example, team work, managerial commitment, learning orientation and openness to new idea.

- The GDH should seriously invest in ICT infrastructure and applications. The study results and literature have shown that ITC has an indirect but positive effect on KM adoption through OC, OS, leadership, climate and collaboration and elements (Rasula *et al.,* 2012). The codification of knowledge in information systems and knowledge repositories does not guarantee efficient KM but has the potential to influence it in a positive way. It is important to note that ICT has no direct influence on knowledge but has an indirect one, as an enabler of a better collaboration among people in the organisation, motivation of people in the organisation and the process view of the organisation.

- The results of the study highlight the role of KM capacity in the relationship between strategic HR practices (mentoring programs, job shadowing, job rotation, coaching, career development, reward and recognition structures, apprenticeship, CoP) and OP. The findings show support for the mediating effect of KM capacity on the relationship between strategic HR practices and OP. Strategic HR practices employ their beneficial effects on OP through the capacity in knowledge acquisition/creation, sharing/transfer, retention/storage and application/use. The practical implication of the results is that the executives and senior managers at the GDH should actively manage the department's human capital through a variety of strategic HR practices to stimulate its capability in managing the elements of knowledge for OP.

- Executive and senior managers at the GDH should endeavour to acquire new knowledge as and when the need arises. Such knowledge, when acquired/created, should be processed and converted into operable forms, easily comprehendible by those who should use it in the department (Ogbadu *et al.,* 2013). The benefit of knowledge is that it brings innovation, so it should be applied to the processes of the delivery of healthcare services offered by the department. For the department to remain competitively successful and performing optimally, its knowledge must be protected and properly stored to avoid leakage and deterioration.

### 6.4.9. Leadership - recommendations

The conclusion with regard to leadership (Section 6.3.9) and the literature has shown that leadership in a knowledge economy is a social process in which group processes and behaviours, such as KM, communication and decision-making play a vital role. Leadership is thus an influence relationship among managers and employees who have in mind real changes that reflect their mutual purpose (Du Plessis & Sukumaran, 2015), the people who build connections, who assemble teams, who motivate everybody on attempting different ideas.

The study findings revealed that key challenges are being experienced in the GDH in the area of leadership in KM, governance, HSD, HR management and information communications and technology. It emerged in the findings that leadership at the GDH did not provide employees with the necessary environment or support to allow sharing, transfer, retention or application of knowledge and information.

The lack of sustained leadership at the GDH was identified as a serious impediment to the implementation of KM. This reinforces the view that support from the leadership level is essential for successful implementation of KM and that transforming the GDH by establishing a culture of KM is something that would be quite do-able with the right leadership (Hislop, 2013; Seba *et al.,* 2012; Suppiah & Sandhu, 2011). The researcher therefore recommends that:

- Executive managers and senior managers across all the levels of the department have a unique and important role to play in managing knowledge. It is particularly important for the HoD and hospital CEOs to be involved in all the KM processes. It is commonly acknowledged in practice that, if the head takes knowledge seriously, the rest of the company will follow automatically.

- Executive managers and senior managers should understand the value of KM and be willing to support and play an assertive role in decision-making.

- To help the department become a learning organisation so it can better face the challenges brought by waves of public-sector reform and societal change, leadership-driven KM is invaluable in the implementation of KM in the GDH.

- Managers are important role models who exemplify the desired behaviour for KM at the GDH. They should exhibit an enthusiasm to share and offer their knowledge freely to employees, to continuously learn and to search for new knowledge and ideas. It is vital that they model their behaviours and actions through deeds, not just words.

- Managers need to lead or direct the change effort, conveying the importance of KM to employees, maintaining their morale and creating a culture that promotes knowledge-sharing and creation. In essence, leaders establish the necessary KM culture.

- Managers' support should be on-going and should be delivered in a practical manner. Such support could then be transformed into concerted efforts that would contribute to the success of KM.

- Managers should use teams, communities of people and other such networks for managing information and knowledge. This leadership role of managing information and knowledge is accomplished through the use of technology infrastructure and through employees' social networks.

- The knowledge leadership at the GDH should be evident throughout the department and should operate at all the hierarchical levels. This implies that the role of a knowledge leader is to provide strategic vision, motivate others, communicate effectively, act as a change agent, coach others around, model good practices and execute the knowledge agenda (Du Plessis & Sukumaran, 2015; Donate & Sanchez de Pablo, 2015).

- The knowledge leaders at the GDH should religiously explain the goals of KM to all concerned so that the employees can identify their roles in achieving those goals. They need to provide guidance on any change taking place in the processes and also the prerogatives needed to attain those goals (Du Plessis & Sukumaran, 2015)

- The sole responsibility of executive managers and senior managers (knowledge leaders) at the GDH, in the KM process, should be to motivate all the GDH employees, give them equal opportunities and developmental avenues, use scientific measures and reward those performances, behaviours and attitudes that are required for effective KM.

## 6.5. Limitations of the study

Every study has its limitations. Creswell (2007) maintains that limitations are a potential weakness in a study. This means that certain factors limit the study and these should be taken into consideration if the context is to be properly understood. The following indicate limitations to this study, especially during the data-gathering stage:

- A larger sample size to the study would allow the model to be cross-validated. In order to achieve more comparable results, further research could involve more provincial departments. The survey could be repeated to compare the results and to check the improvement. Besides, the same investigation could be performed in other provincial departments to compare the results and to check how the implementation of KM could improve OP and HSD. Nevertheless, the extension of the survey would not have been possible because the provincial departments are autonomous and independent from one another and the different provinces have different challenges.

- It was difficult to access some of the senior executives in the department as well as the CEOs of the hospitals. This was apparently owing to their busy schedules and the political sensitivities prevailing at the time.

- While this study considered an input from researchers from the academic community, professional medical consultants in the public-sector HS in South African local government and the public as victims of poor HSD: they were not interviewed. As the Gauteng community is the primary victim of poor HSD at the regional healthcare centres and hospitals, this may disadvantage the views on HSD. However, the Gauteng community, as recipients of the healthcare services were excluded in the survey or interviews because the study concerned OP and HSD and had less to do with customer satisfaction or the impact of poor HSD on recipients.

- Because no other studies had been conducted in public healthcare in South Africa with the same objectives, an examination of the factors facilitating

effective KM was imperative to this study, the researcher also realised that an intensive research strategy might have yielded a much more solid empirical basis for KM in the GDH.

The use of the web-based online surveys assisted greatly in reaching and engaging with all the diverse regional public healthcare centres, hospitals and clinics identified in the sample. The online survey was faster, cheaper, easier to use for participants, quick to analyse, more selective and more flexible. The online survey provided the capability of the Internet to provide access to GDH employees who, because of the remoteness of some of the PHC centres, would otherwise have found it difficult, if not impossible, to reach other channels.

### 6.6. Implications of research for theory and practice

A number of business and academic gurus with whom the researcher has interacted in his twenty years of professional and academic life, including recent studies by some authors, namely Honarpour, Jusoh, MD Nor (2017), Antonelli & Fassio (2016), Mkhize (2015), Sook-Ling *et al.* (2015) and Meihami & Meihami (2014), claim that, in order for organisations to improve their OP and have a lasting competitive advantage in a knowledge economy, they will have to be knowledge-driven. If organisational knowledge and intellectual property are viewed as critical resources for an organisation's survival and success in the global market, then, like any other resources, they demand good management (Grindle, 2013).

However, the bulk of organisations still have not approached KM activities formally or deliberately (Grindle, 2013). The cause for this oversight could be that most organisations are still struggling to comprehend the KM concept. To palliate against this, the fundamental issue of identifying and acknowledging KM is one of the requirements that has to be addressed.

The study revealed that KM was not the backbone of practice at the GDH and as such, suggesting its use in the department would be dependent on organisation-wide decisions. This study further shows that the use of mixed-methods for data collection

helped the researcher to match the insights provided by quantitative and qualitative research in answering the research questions.

With regard to the topic in question, the study contributes to the existing body of knowledge by integrating KM practices where they are extrinsic to the organisation and their implementation in a public-sector healthcare organisation. For this reason, the contribution of this study is original. This study is important because, in the public HS in particular, due to the fast-changing knowledge and information environments, which are affected by the public-sector reform, new technologies and new medical discoveries to establish good quality knowledge systems, there are a number of practices that need further investigation. Thus, the findings of the present study may be of use to the government public healthcare departments, KM scholars, educators, researchers and students undertaking studies in KM practices, internationally.

Therefore, the overall implications for this study is that, although, there are several researches investigating the relationship between KM and OP, the past researchers like Mills and Smith (2010) have confirmed the positive and significant correlation of KM and OP and HSD. This is the first study in the public healthcare space managed by the largest provincial DoH in South Africa and it is in line with the other studies conducted elsewhere in the world. The public-sector in South Africa has begun realising the importance of managing knowledge as a strategic asset. However, the approach towards KM varies.

Some government departments rely more on creating a knowledge culture in an organisation while others emphasise the need for a process approach to manage both tacit and explicit knowledge within departments. The current research explained some aspects of KM and the relationship between KM capabilities and OP and HSD. As illustrated in Figure 42 in Section 4.11 in page 312, the result of confirmatory factor analysis determined that the research models are positive and significant. Hence, it can be concluded that knowledge infrastructure capabilities and knowledge process capability play an important role in improving organisation performance mainly resulting in improved HSD. Also, testing the hypothesis of the study showed that the knowledge infrastructure capability (information technology, OC and OS) and

knowledge process capabilities (knowledge acquisition/creation, knowledge sharing/transfer, knowledge retention/storage and knowledge application/use) influence the OP and HSD.

Therefore, the key contributions of the study arise from what has already been established in KM literature in terms of the link between KM and OP and HSD; and how the public-sector organisations could benefit from KM implementation. These could be briefly summarised in the following sub-sections.

### 6.6.1. Public-sector reform

Major changes as a result of the public-sector reform initiative by the government have resulted in the contemporary paradigm and changes that have influenced the manner in which the South African government has functioned over the last two decades. In 1994, the legacy of apartheid presented the new South Africa with enormous challenges: poverty, inequality and the immense aspirations for greater access to basic public services.

The government immediately began addressing these challenges by enshrining constitutional rights to service access, radically reforming economic and sector policies and funding ambitious service delivery programs. A new governance and administrative framework for culturally and racially diverse provinces and municipalities had to be built—and the new structure had to progress quickly in delivering the improved services expected by the public.

Since the 1994 political dispensation, significant efforts have been made to reform and transform public-sector management and performance. In the context of SA, among the significant factors that have influenced public-sector reforms are the increase in the numbers of people who receive public services, the declining economy, poor service delivery, bureaucratic and institutional weaknesses and the lack of good governance.

To this end, the OP and HSD at the GDH has been found to be in need of transformation to a more knowledge-based approach. The study revealed that KM was not the backbone of the GDH, suggesting that its use in the department would be dependent on the department-wide decisions. This study further showed that the mixed-method approach to data collection helped the researcher to match the insights provided by quantitative and qualitative research in answering questions.

### 6.6.2. KM strategy, policies and practices

The researcher used the interview transcripts (Appendix N) to trace those variables, which could account for the achievement of knowledge-based outcomes in the GDH and related regional healthcare entities. Based on the questions posed to the interviewees to confirm whether there was any KM strategy in place in their department and regional healthcare entities, the researcher realised that, in all the research entities, there was no KM strategy in place. But the interviewees were able to reflect on the tools and various practices used in their business units for ensuring the acquisition and transfer of information and knowledge in order to improve efficiency in their organisations.

The researcher came to the conclusion that the GDH, the related regional healthcare entities and the hospitals had some KM-related practices in place even though there was no KM strategy and leadership and that the management were not consciously aware that this was KM. To demonstrate that, indeed, the entities had some KM-related practices in place, all the managers interviewed were able to cite the benefits of managing knowledge in their entities. The researcher realised that the source of these KM benefits (knowledge-based outcomes) was the KM-related practices which were considered by most managers to be ways of ensuring that improved and quality service was provided by their entities.

Although KM was not explicit in all the GDH and related regional healthcare entities, the existence of KM in the GDH and its related regional healthcare entities should not

be underestimated. Arising from both the questionnaire and the interview data, the following KM- related practices were observed in the GDH:

- Information management initiatives.
- HR Development practices.
- In-house training unit.
- Employee training workshops.
- Performance improvement plans.
- Human capital development.
- The quality improvement cycle.

Having conducted an extensive literature survey on KM, the researcher realises that the issue of KM is consistent with findings from organisations in the initial stages of knowledge-management implementation (Yin, 2014; Zaied *et al.,* 2012). These scholars agreed that those organisations in their initial stages of KM implementation tend to approach KM as a series of business improvement-related practices without labelling them as KM

While agreeing with other KM scholars that because, it allows individuals to be conscious of their roles in knowledge generation and sharing, a formal KM strategy is beneficial to an organisation as a whole, (Fleig-Palmer & Schoorman, 2011), the researcher noted that the research results emanating from this study confirm the finding that a sustainable KM strategy has deep roots in implicit KM principles.

### 6.6.3. Leadership

The findings imply also that the best form of leadership style for managing knowledge in an organisation is the delegating style, whereby employees are given adequate power, authority and responsibility to experiment and innovate with facts and figures which they may come across while working on any tasks. In other words, KM-A of knowledge can be fully realised only if the organisation starts preaching as well as practising a leadership style, which gives people the freedom to think and act on any of the organisationally relevant issues and KM strategy. The researcher hopes that

this important implication of the findings of the study can be used by the practising managers in both letter and spirit.

The research results have serious implication for the role of KM-related practices in laying the foundation of a sustainable, formalised KM implementation. What the research results imply is that, in the GDH, the backgrounds of KM need to be examined in greater profundity.

### 6.6.4. Human resources management

Though KM should not be confused with individual practices, various scholars have observed that initiatives for KM (Kruger & Johnson, 2010), workplace learning and employee training (Shaibuternni, 2014), positive HR practices (Zaied *et al.,* 2012) and quality improvement (Honarpour *et al.,* 2017) lead to benefits similar to those of KM. By investing in these KM-related practices, the research entities were certain of reaping the benefits of KM.

The findings in this study demonstrated the need for organisations to give consideration to the human element when designing business processes for KM. ICT solutions are commonly thrown at the problem through implementations that are costly and time-consuming to put into practice. A plethora of information and recommendations exist that describe how to design logic for use of human resources management systems but they do not explain how to design an HR application to ensure that it will be used.

Consideration of the human element surpasses human computer interface issues but it is not answered entirely by social networking solutions. This problem in creating knowledge resources requires understanding how to motivate individuals to share and how to capture the results of the sharing. While human resources were not an area of focus in this study, the value of created/acquired knowledge was.

This study demonstrated that the employees valued meaningful knowledge resources; and knowledge resources became meaningful when they were used. The missing

elements in the mix were the creation/acquisition, retention/storage, application/use of shared/transferred knowledge, not only to encourage employees to do this but for its documentation to occur as well. Employers can give this some help by making knowledge-sharing/transfer commonplace in day-to- day activity.

As the desired behaviour is exemplified, so it will be practised. As indicated in the study findings, employees will share/transfer knowledge dependent on their willingness, certainty and sense of personal responsibility. The acknowledgement of contributions and contributors is a small gesture that may increase the willingness to share knowledge. A measure as simple as giving the individual permission to change their contribution or decide to whom it should be shared will permit that individual a sense of control.

This control provides a sense of security in knowing that they decide to release their knowledge when they are certain of it. The ultimate effect in sharing, however, is one's sense of personal responsibility. Thus, it is up to the individual if they wish to share or not. An organisation can employ motivational factors, such as acknowledgement and recognition of individuals' contributions.

There are many established models in KM theory and this study is not the first to suggest that KM could be effectively used to improve OP and HSD, but its findings are ground-breaking in the sense that KM capabilities are considered the foundation of a formalised KM approach in organisations that appear not to be aware of the existence of the concept of KM. Thus, the findings of the present study may be of use to the public-sector organisations, KM scholars, KM practitioners, researchers and students undertaking studies in KM.

### 6.7. Suggestions for further research

The findings here suggest several possibilities for future research into the relationship between KM, OP and HSD. It is important to carry out further research in linking knowledge infrastructure and knowledge process variables of KM with the GDH OP

and HSD. It will, thus, give a significant tool to the management to further implement such KM activities in their government departments or public-sector organisations.

A larger sample size for both the survey and interviews, taken from across provincial government departments and covering all the provinces of South Africa could be beneficial. Not only could it provide more information on the phenomenon being studied but it could also identify whether particular KM capabilities dimensions are influenced by the nature of the public-sector occupation as well as OC, OS and information technology, as suggested by the findings.

Some empirical research into the relationship between KM capabilities and the OP and HSD indicate that complementary, rather than direct relationship may provide a more accurate explanation of OP and HSD outcome. This is supported by the study's findings that information technology, OC and OS appear to be mediators in the KM capability- OP and a HSD model. This suggests that other variables, such as external (i.e. government regulations, government information management) and internal environments (i.e. government protocol) within which the organisation operates should be taken into account in investigating the relationship between KM capabilities and the OP and HSD, to provide a wider context for the implementation of KM.

The proposed knowledge-based OP and HSD model (Figure 69 in Section 6.3.10, page 467) focused on the discussion and analysis of KM and the core capabilities that are needed to facilitate success in improving knowledge-handling for KM in one provincial government department. The researcher believes this to be a very important distinction, because many organisations tend to launch KM programs without due consideration of the organisation's capabilities to guarantee any measure of success.

Through analysis of theory and empirical testing, this study strongly supports the notion that organisations may possess a predisposition to successful KM through the development of key capabilities. The findings of the study suggest that theories of KM capabilities provided a rich resource for developing empirically-based studies that could provide a useful benchmark for implementing and managing KM in organisations. Thus, future studies on KM in the provincial government departments

need to test the practical application of this model so as to address other features inherent in such a framework.

It is too early for the researcher to lay claim to a fully-fledged knowledge-based OP and HSD model for provincial government departments operating in the provincial governments of South Africa. Future research should consider expanding the empirical perspective by investigating KM in other provincial departments and the national department in order to clearly understand KM in public healthcare in South Africa.

The link between KM practices and KM benefits needs further investigations. While the findings of the study revealed that some senior managers and employees claimed during the interviews and survey that they had some form of KM in their department, it was apparent that there was a serious lack of understanding of what KM actually entailed. This necessitates a thorough research strategy to diversify KM practices in the South African public-sector and related benefits.

The critical idea is linking KM strategies to people by building the reward and recognition programs, the employee recognition plan, career development, CoP, mentoring programs, job shadowing, job rotation and coaching in encouraging all the elements of knowledge creation. This is because it includes elements of human resources management, making it important to investigate how it applies to a knowledge-based public-sector organisation.

This study would have contributed quite significantly to the KM debate should its findings lead to the resurgence of KM awareness in the GDH and practitioners in other provincial departments and elsewhere. Government departments are petitioned to deepen KM understanding and awareness in the South African public-sector.

## 6.8. Conclusion

The study investigated the use of KM practices for the improvement in OP and HSD in the GDH, where the operational culture was not KM. Its purpose was to examine

the current OP and HSD in an environment in which the public-sector reform initiatives were impacting on the public-sector for operational efficiency and service delivery.

A significant amount of research has been carried out on the effect of KM on the performance of an organisation. Factors like OC, OS, human resources management, leadership and ICT have been said to have affected KM practices and its adoption. Nonetheless, all of these researches show a positive correlation between KM and OP and service delivery. In line with previous studies, the findings of this study revealed a positive relationship between KM capabilities and OP and HSD. Relationships were drawn between KM and key indicators of OP, including productivity and service delivery, all of which, proved to positively correlate. Hence, there is a direct and positive relationship between KM and the OP and HSD of the GDH.

It is clear that the challenges facing some of the country's principal government departments, such as the GDH, are consistent with the findings of studies and discussions on KM in the public-sector in general. It is likewise clear that there is a variety of differentiated pictures of KM capacities and strengths among the different government departments. Indeed, this is symptomatic of the varied nature of service delivery capacities across South Africa, as a whole.

For example, studies on the government in South Africa have long signalled that the existence of differentiated capacities and pockets of excellence across the public-sector stood as the single most important obstacle to the realisation of a strong developmental state. This has led to calls by healthcare organisations, professionals and specialists for a reconfiguration of the public HS to boost the HSD capacity through co-ordination. However, what is missing in this new debate on reconfiguring the state, is the potential presented by an effective public-sector KM strategy in building cohesion, shared learning and innovation across the whole healthcare sector.

There is no doubt that the hierarchical and highly compartmentalised structure of the GDH and the related regional healthcare entities and hospitals also accounts for most of the problems faced by the GDH in implementing and institutionalising KM. Further, the paucity of and often varied, understanding of what KM is, stand as key disablers.

In particular, the thinking that KM is the same as information management or ICT has led to the development of unnecessary, expensive and often incompatible IT systems or tools that only a few find useful.

Even worse, this lack of understanding of KM as a concept also explains why employees view it as extra work for which they simply do not have time. This is despite the fact that the GDH employees are actually knowledge workers themselves. An even bigger challenge to KM in the GDH and its related regional healthcare entities and hospitals is a crisis of expectations. As there is always an expectation from management for quick results, it is aspired that KM will preferably yield results over a long-term.

Beyond the isolated and emerging pockets of a thriving KM practice in some government departments, a lot of other numerous obstacles still remain. Among those commonly cited in the literature include the lack of skilled resources and internal research capacity to create and acquire knowledge, weak organisational and senior management support for KM initiatives, lack of appropriate KM culture, hierarchical and bureaucratic OS, viable learning platforms and a culture of intolerance of criticism. Because no viable KM culture can be built on a low-skills base, the point on the lack of internal capacity to carry out research and capture/acquire knowledge is indeed a profound.

It is clear that, while there exist some silos of progress, particularly in other public-sector entities such as the SOEs and a few provincial governments and national government departments, there is no doubt that a new KM culture or discipline remains largely in its infancy in the public-sector of South Africa. In turn, the failure to implement KM in government departments such as the GDH and its related regional healthcare entities and hospitals will have far-reaching consequences for the delivery of healthcare in South Africa.

Finally, to enhance the use of KM in the GDH so as to improve its overall OP and HSD and to be the driving force for organisational change in the improvement of workforce productivity and organisational effectiveness, management buy-in and support is

essential. This study established that the effective implementation of KM depends largely on number of factors, the most important of which are the proper and well-formulated KM strategies and policies, collaborating, sharing, leadership and developing an enabling OS and culture.

In that knowledge environment, the whole department should focus on improving its OP by enabling learning and innovation, acknowledging and resolving disparities in its business processes and service delivery operations and recognising knowledge (comprised of people and information) as a critical organisational asset which has to be managed through enabling KM strategies, policies and guidelines and appropriate technologies.

Recognising knowledge and information as organisational assets would help the department to refocus on using their already existing knowledge and enable it to be innovative rather than limiting itself to healthcare policies and regulations and best practices solutions only. That is facilitated by interconnectedness among business units, regional healthcare facilities and hospitals, including employees and ICT in the department, which enables better decision-making capabilities.

KM is about enhancing the use of organisational knowledge through sound practices of KM and organisational learning. Thus, KM is a combination of information management, communication and human resources. The employees need to be fully au fait with what is happening in the organisation, which includes current priorities and work in progress - 'who is doing what now'. In the process, the quality of HSD by the GDH is enhanced.

Thus, the study recommends the adoption of a KM strategy, policy and guidelines at the GDH, the establishment of viable communities of practice; encouragement to build a KM environment (structure and culture); implementation of KM supportive human resources management practices and leadership; investment in ICT infrastructure improvement to ensure that knowledge is created/acquired, shared/transferred, retained/stored and applied/used in the organisational systems.

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## APPENDICES

## Appendix A: Health Acts

| Health Acts |
|---|
| Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972) |
| Radiation Control Act: Hazardous Substances Act |
| Traditional Health Practitioners Act (Act 35 of 2004) |
| Dental Technician Amendment Act (Act 24 of 2004) |
| National Health Act (Act 61 of 2003) |
| Council for Medical Schemes Levies Act (Act 58 of 2000) |
| Chiropractors, Homeopaths and Allied Health-Service Professions Amendment Act (Act 6 of 2000) |
| Pharmacy Amendment Act (Act 1 of 2000) |
| Tobacco Products Control Amendment Act (Act 12 of 1999) |
| Sterilisation Act (Act 44 of 1998) |
| Medical Schemes Act (Act 131 of 1998) |
| Genetically Modified Organisms Act (Act 15 of 1997) |
| Nursing Amendment Act (Act 19 of 1997) |
| Medical University of Southern Africa (Private) Amendment Act (Act 25 of 1997) |
| Dental Technicians Amendment Act (Act 43 of 1997) |
| Compensation for Occupational Injuries and Diseases Amendment Act (Act 61 of 1997) |
| Pharmacy Amendment Act (Act 88 of 1997) |
| Medical, Dental Medical, Dental and Supplementary Health-Service Profession Amendment Act (Act 89 of 1997) |
| Medical, Dental Medical, Dental and Supplementary Health-Service Professions Amendment Act (Act 89 of 1997) |
| Medicines and Related Substances Control Amendment Act (Act 90 of 1997) |
| Chiropractors, Homeopaths Substances and Allied Health-Service Professions Amendment Act (Act 91 of 1997) |
| Nursing Amendment Act (Act 5 of 1995) |
| Pharmacy Amendment Act (Act 6 of 1995) |
| Medical, Dental and Supplementary Health-Service Professions Amendment Act (Act 18 of 1995) |
| Chiropractors, Homeopaths and Allied Health-Service Professions Amendment Act (Act 40 of 1995) |
| Radiation Control Act: Group IV Hazardous Substances Exclusions and Exemptions |
| Hazardous Substances Act, No. 15 |
| Foodstuffs, Cosmetics and Disinfectants Act No.54 |

## Appendix B: Department of Health Policies and Guidelines

| Policies and Guidelines |
|---|
| Essential steps in the management of common conditions associated with maternal mortality |
| A monograph of the management of postpartum haemorrhage |
| Guidelines for maternity care in South Africa 2007 |
| Yellow Fever Policy |
| Guidelines on leprosy control in South Africa |
| "Multi drug resistant tuberculosis Policy framework on decentralised and deinstitutionalised management for South Africa" |
| Guidelines for the prevention of malaria in South Africa |
| Guidelines for the treatment of malaria in South Africa |
| Policy on the management of hospitals |
| Policy on Language services |
| Clinical Mentorship Manual for Integrated Services |
| Employment of Foreign Health Professionals in the South African Health-Sector |
| Policy and Guidelines for the Implementation of the PMTCT Program |
| South Africa`s National Policy Framework for Women`s Empowerment and Gender Equality |
| Policy Guidelines on Child and Adolescent Mental Health |
| Infant and Young Child Feeding Policy |
| Occupational Health and Safety Policy for the National Department of Health |
| The National Infection Prevention and Control Policy & Strategy |
| A Policy on Quality in Healthcare for South Africa |
| The National Infection Prevention and Control Policy for TB, MDRTB and XDRTB Part 1 |
| The National Infection Prevention and Control Policy for TB, MDRTB and XDRTB Part 2 |
| Policy guidelines for Youth and Adolescent health Part 5a |
| Policy guidelines for Youth and Adolescent health Part 5b |
| Policy guidelines for Youth and Adolescent health Part 1 |
| Policy guidelines for Youth and Adolescent health Part 4 |
| Policy guidelines for Youth and Adolescent health Part 6 |
| Policy guidelines for Youth and Adolescent health Part 3 |
| Policy guidelines for Youth and Adolescent health Part 2 |
| Health Research Policy in South Africa (PDF) 2001 |
| Human Genetics Policy Guidelines for the Management and Prevention of Genetic Disorders, Birth Defects and Disabilities |
| Report of The Sub-committee on Genetic Laboratory Services (1999) (PDF) |
| Guidelines for Good Practice in the Conduct of Clinical Trials in Human Participants in South Africa September |
| A Synopsis of Health Policies & Legislation: 1994 2000 |
| The Primary Healthcare Package for South Africa a set of norms and standards March |
| Managing the impact of HIV/AIDS in SADC August (PDF) |
| HIV/AIDS and Sexually Transmitted Diseases in the Workplace |
| District Health System |
| Guide on how to create a smoke free workplace |
| White Paper for the transformation of the Health System in South Africa |
| National Drugs Policy for South Africa January 1996 |

## Appendix C: Department of Health Strategic Documents

| Strategic Documents |
|---|
| Annual Performance Plan 2011/2012 |
| Human Resource Strategy for the Health-Sector: 2012/13 2016/17 |
| National Department of Health Strategic Plan 2010/11 2012/13 Foreword |
| National Department of Health Strategic Plan 2010/11 2012/13 Statement |
| National Department of Health Strategic Plan 2010/11 2012/13 Part 2 |
| National Department of Health Strategic Plan 2010/11 2012/13 Part 3 |
| National Department of Health Strategic Plan 2010/11 2012/13 Part 4 |
| National Health Information System of South Africa, National Department of Health. Draft |
| E-Health White Paper, 2009 |
| National Health Information System of South Africa, National Department of Health. The National Strategic Framework for her.za Implementation in South Africa. July 2007. |
| Monitoring & Evaluation Framework for the HIV & AIDS and STIs National Strategic Plan 2007 2011 Abbreviations, Introduction, Lists Comprehensive, Reference, Abstract, Monitoring, Cover |
| Nursing Strategy for South Africa 2008 |
| HIV and AIDS and STI Strategic Plan for South Africa, 2007 2011 Part 1, Part 2, Part 3 and Part 4 |
| Tuberculosis Strategic Plan for South Africa, 2007 2011 Part 1, Part 2, Part 3, Part 4 |
| Broad Frame Work for HIV & AIDS and STI Strategic Plan for South Africa, 2007 2011 November 2006 |
| South African National Oral Health Strategy |
| Strategic Plan 2010/11 2012/13, Annexure 2: Information Communication Technology (ICT) Plan for 2010 11/12/13 |

## Appendix D: Websites

| Websites |
|---|
| http://www.hst.org.za/healthstats/index.php. Health Systems Trust. Health Statistics |
| http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(nominal)_per_capita |
| http://www.southafrica.info/business/economy/development/lfs 280308.htm |
| https://www.cia.gov/library/publications/the Country Case-Study for e-Health: South Africa |
| http://www.southafrica.info/ess_info/sa_glance/health/health.htm. Healthcare in South Africa. |
| http://www.doh.gov.za |
| http://www.doh.gov.za/programs/telef.html |
| http://www.doh.gov.za/nhis/index.html |
| http://www.doh.gov.za/department/subdir/dhis.html |
| http://www.doh.gov.za/docs/legislationf.html |
| http://www.doh.gov.za/docs/pamplets/chbc.pdf |
| http://www.doh.gov.za/nhis |
| http://humanresources.about.com/od/changemanagement/a/change_lessons3.htm, |

## Appendix E: Journals

| Journals | |
|---|---|
| 1 | TECNIA Journal of Management Studies |
| 2 | Public Administration Review |
| 3 | The economist |
| 4 | South African Journal of Library & Information Science |
| 5 | Political Science Quarterly |
| 6 | Journal of the Royal Society of Medicine, |
| 7 | Journal of Organisation Transformation & Social Change |
| 8 | International Journal of Human and Social Sciences |
| 9 | Academy of Management Journal |
| 10 | Journal of Politics and International Relations, |
| 11 | Strategic Management Journal, |
| 12 | International journal of conflict management, |
| 13 | Advanced Management Journal |
| 14 | Journal of Intellectual Capital |
| 15 | International Journal of Learning and Intellectual Capital, |
| 16 | Southern African Journal of Business Management, |
| 17 | International Journal of Organisational Analysis, |
| 18 | A Business Process Management Journal |
| 19 | International Journal of Healthcare Quality Assurance |
| 20 | International Journal of Public-sector Management |
| 21 | International Journal of Quality & Reliability Management, |
| 22 | Journal of management information systems, |
| 23 | Harvard Business Review, |
| 24 | Journal of Product Innovation Management |
| 25 | Strategic management journal |
| 26 | Journal of Management Development, |
| 27 | The AMFITEATRU ECONOMIC journal, |
| 28 | Sloan Management Review |
| 29 | International Journal of Learning and Intellectual Capital, |
| 30 | Journal of Technology Management in China |
| 31 | MIS quarterly |
| 32 | Journal of e-business, |
| 33 | Journal of Engineering, Design and Technology, |
| 34 | International Journal of Information Management, |
| 34 | Journal of International Development |
| 36 | International Journal of Business and Management |
| 37 | International Journal of Business and Systems Research, |
| 38 | Electronic Journal of Radical Organisation Theory, |

## Appendix F: Questionnaire for staff of the GDH and related Entities

Dear Participant,

I am gathering data for a research project in fulfilment of my Ph.D. studies at the University of South Africa (UNISA), College of Science, Engineering and Technology, School of Computing, P. O. Box 392, UNISA 0003, UNISA - Campus, Preller Street, Muckleneuk Ridge, Pretoria, South Africa. I have attached a narrative discussion of my thesis, which provides some information about the study I would like to conduct at the GDH. The title of my research study is, "**The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health."**

The specific objectives of this study are:

a) To investigate the information and knowledge practices at the GDH;
b) To investigate to what extent the concept of knowledge management is understood at the GDH;
c) To determine the need for knowledge management practices at the GDH by investigating what knowledge assets exist and identifying gaps;
d) To determine the need for knowledge management at the GDH to increase productivity, improve OP and healthcare service delivery;
e) To determine what knowledge identification and creation, knowledge storing, sharing and transfer, knowledge retention and use policies are in place in the GDH;
f) To determine the extent to which the GDH organisational culture encourages information flow and sharing; and
g) To propose the implementation of knowledge management strategies and initiatives as a solution to the current challenges and to improve OP and healthcare service delivery.

Please assist me by completing and submitting the survey provided before 30/05/2014. The survey is not intrusive and takes on average 20 minutes to complete. At this point, I have successfully submitted my research proposal to UNISA. The following is a brief overview of the study:

**Purpose of the study:**

The GDH is facing serious challenges in respect of OP and healthcare service delivery. These challenges are aggravated by public health challenges that include the burden of TB, HIV and AIDS, financial mismanagement and a shortage of key medical professionals. The improvement of healthcare service delivery is therefore overriding in the GDH, which needs effective strategies for successful and sustainable transformation in line with public-sector reform. One possible solution to overcome the problem could be the use of knowledge management strategies and practices for successful transformation to improve OP and healthcare service delivery. The study aims to investigate the practical use of knowledge management for the transformation of the GDH into a high-performance organisation rendering effective healthcare services in the South African public-sector.

**Procedures to be used:**

Your selection to participate in this research was purely through random sampling of participants who will complete a short survey. Concurrently, some participants will meet with the researcher for a 20-minute interview in their offices at times that are convenient to them between 01/04/2014 and 30/05/2014.

**Potential risks to participants:**

There is no perceptible risk to the participants involved in this study.

**Potential benefits of the study:**

Identification of what the department needs to do to improve OP and enhance the quality of healthcare service delivery will enable the researcher to make recommendations on knowledge management strategies and policies to increase support to healthcare centres and hospitals.

**Protection of the identity and privacy of participants:**

Please note that your views in this questionnaire will not, in any way, be used for any purpose other than the advancement of this study. Participants are requested to answer only the questions in the questionnaire and responses are encrypted so that they are not readable to anyone but the researcher. Respect for the privacy and identity of participants is in accordance with the specifications of the UNISA Policy on Research Ethics (2007). You are therefore assured that your views on the content of this questionnaire will not be used in any way that might cause damage to your reputation as an individual or otherwise, your integrity, emotions, or indeed professional conduct, as the information provided will be treated with a high-level of confidentiality. Participants may also withdraw from the study at any time if they feel they do not wish to complete it. Other than the survey questions, only general demographic information will be asked. Once returned to the investigator, the research results and findings will be analysed.

Thank you in anticipation for your support.

I can be reached by e-mail at 35161108@mylife.unisa.ac.za or

**Instructions**

1. Write in the provided spaces where appropriate; if the space is insufficient, please use a separate sheet of paper.

2. Please tick (√) the appropriate boxes as provided.

3. Terms with which you may not be familiar are defined at the beginning of each section.

**DEMOGRAPHICS:**

The following items will be used for classification purpose only. The items will be used to group your responses with those of others like yourself. Your response will be treated confidentially and will never be used to identify specific individuals.

| SECTION A: SOCIO-DEMOGRAPHIC (Please tick (x) where appropriate) | | | Mark with a X | | |
|---|---|---|---|---|---|
| **Q1. Do you consent to participate in this survey? :** | Yes | | **1** | | |
| | No | | **2** | | |
| **Q2. Which business unit of the GDH do you work?** | Provincial Department | | **1** | | |
| | Regional Healthcare | | **2** | | |
| | Hospital | | **3** | | |
| | Other (specify) | | | | |
| **Q3. Gender:** | Male | | **1** | | |
| | Female | | **2** | | |
| **Q4. Age in years:** | Below 20 years | | **1** | | |
| | 20 - 29 years | | **2** | | |
| | 30 - 39 years | | **3** | | |
| | 40 - 49 years | | **4** | | |
| | 50 years and above | | **5** | | |
| **Q5. Curent position in organisation :** | Executive Management | | **1** | | |
| | Senior Manager | | **2** | | |
| | Middle Manager | | **3** | | |
| | Health Professional | | **4** | | |
| | General staff | | **5** | | |
| **Q6. Staff Category** | Full-time | | **1** | | |
| | Part-time | | **2** | | |
| | Contractor | | **3** | | |
| | Other (specify) | | | | |

| | | | | | |
|---|---|---|---|---|---|
| **Q7. Race:** | Black | | **1** | | |
| | White | | **2** | | |
| | Coloured | | **3** | | |
| | Asian | | **4** | | |
| | Indian | | **5** | | |
| | Other (specify) | | | | |
| **Q8. Number of years working in the department:** | Less than a year | | **1** | | |
| | 1 - 2 years | | **2** | | |
| | 3 - 5 years | | **3** | | |
| | 6 - 10 years | | **4** | | |
| | 11 - 15 years | | **5** | | |
| | 16 - 20years | | **6** | | |
| | Above 20 years | | **7** | | |
| **Q9. Number of years working in current position:** | Less than a year | | **1** | | |
| | 1 - 2 years | | **2** | | |
| | 3 - 5 years | | **3** | | |
| | 6 - 10 years | | **4** | | |
| | 11 - 15 years | | **5** | | |
| | 16 - 20 years | | **6** | | |
| | Above 20 years | | **7** | | |
| **Q10: What is the highest academic qualification achieved:** | None | | **1** | | |
| | Standard 8/ Grade 10/N1 | | **2** | | |
| | Standard 9 / Grade 11/N2 | | **3** | | |
| | Standard 10/ Grade 12 (Matric)/N3 | | **4** | | |
| | Diploma/certificate (vocational training)/T3/S3/N6 | | **5** | | |
| | University degree/ T4/Higher Diploma | | **6** | | |
| | Professional (e.g. MBChB) | | **7** | | |
| | Masters degree | | **8** | | |

| | | | | | |
|---|---|---|---|---|---|
| | Doctoral degree | | 9 | | |
| | | | | | |
| **SECTION B: RESEARCH QUESTION 1** | | | | | |
| **RQ1 - THE LEVEL OF UNDERSTANDING OF KNOWLEDGE MANAGEMENT** | | | | | |
| **Q11. Indicate your level of agreement to the following statement** | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** |
| Q11a) Knowledge includes everything I know | 1 | 2 | 3 | 4 | 5 |
| Q11b) Knowledge includes experience | 1 | 2 | 3 | 4 | 5 |
| Q11c) Values and intuition forms part of my knowledge | 1 | 2 | 3 | 4 | 5 |
| Q11d) My knowledge is hidden in my brain | 1 | 2 | 3 | 4 | 5 |
| Q11e) My knowledge is documented and available to others | 1 | 2 | 3 | 4 | 5 |
| Q11f) The organisation strongly believes in the learning by doing concept | 1 | 2 | 3 | 4 | 5 |
| Q11g) My knowledge gives me a competitive advantage | 1 | 2 | 3 | 4 | 5 |
| Q11h) Knowledge management is a new way to add value to information in the department | 1 | 2 | 3 | 4 | 5 |
| Q11i) A major new strategic initiative is to remain competitive | 1 | 2 | 3 | 4 | 5 |
| | | | | | |
| **SECTION C: RESEARCH QUESTION 2** | | | | | |
| **RQ2- KNOWLEDGE MANAGEMENT STRATEGIES AND OPERATIONAL OBJECTIVES** | | | | | |
| **Q12. Indicate your level of agreement to the following statement** | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** |
| Q12a) The department has a written knowledge management policy or strategy in place | 1 | 2 | 3 | 4 | **5** |
| Q12b) A formal knowledge plan exists in the organisation | 1 | 2 | 3 | 4 | 5 |
| Q12c) Knowledge management is a formal function in the organisation | 1 | 2 | 3 | 4 | 5 |
| Q12d) Knowledge management is all about intellectual capital, intellectual assets and a learning organisation | 1 | 2 | 3 | 4 | 5 |
| Q12e) Top management promotes and is committed to knowledge management in the organisation | 1 | 2 | 3 | 4 | 5 |
| Q12f) There is no stand-alone knowledge management strategy document but incorporated in department strategy | 1 | 2 | 3 | 4 | 5 |
| Q12g) There is no written strategy and the department has not initiated knowledge management practices | 1 | 2 | 3 | 4 | 5 |
| Q12h) There is a knowledge management program in place in the department | 1 | 2 | 3 | 4 | 5 |
| Q12i) I need knowledge to carry out my work | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| Q12j) The department is currently setting up a knowledge management program in the department | 1 | 2 | 3 | 4 | 5 |
| Q12k) Knowledge management initiatives have been started and then abandoned | 1 | 2 | 3 | 4 | 5 |
| Q12l) The department has a value system or program intended to promote knowledge-sharing | | 2 | 3 | 4 | 5 |
| Q12m) The department has policies or programs intended to improve worker retention | 1 | 2 | 3 | 4 | 5 |
| Q12n) The department provides training related to knowledge management practices | 1 | 2 | 3 | 4 | 5 |
| Q12o) I have received informal training related to knowledge management | 1 | 2 | 3 | 4 | 5 |
| Q12p) The department use and supports formal mentoring practices, including apprenticeship | 1 | 2 | 3 | 4 | 5 |
| Q12q) The department offers off-site training to employees in order to enrich their knowledge base and skills | 1 | 2 | 3 | 4 | 5 |
| Q12r) The department regularly updates database/repository of good work practices, lessons learnt or listings of experts | 1 | 2 | 3 | 4 | 5 |
| Q12s) There is documentation such as lessons learnt, training manuals, good work practices, articles for publication, etc. (organisation memory | 1 | 2 | 3 | 4 | 5 |
| | | | | | |
| **SECTION D: RESEARCH QUESTION 3** | | | | | |
| **RQ3- KNOWLEDGE MANAGEMENT USE IN THE DEPARTMENT** | | | | | |
| **Q13. Please indicate the importance of the use of knowledge management practices in the department** | **Crucial (very important)** | **Important** | **Somewhat important** | **Of little importance** | **Not important at all** |
| Q13a) To improve the competitive advantage of the department | 1 | 2 | 3 | 4 | **5** |
| Q13b) To help integrate knowledge within the department | 1 | 2 | 3 | 4 | 5 |
| Q13c) To improve the capture and use of knowledge from sources outside the department | 1 | 2 | 3 | 4 | 5 |
| Q13d) To improve sharing or transferring knowledge with other employees in the department | 1 | 2 | 3 | 4 | 5 |
| Q13e) To increase efficiency by using knowledge to improve healthcare service delivery processes | 1 | 2 | 3 | 4 | 5 |
| Q13f) To protect the department from loss of knowledge due to employees' departure | 1 | 2 | 3 | 4 | 5 |
| Q13g) To train employees to meet strategic objectives of the department | 1 | 2 | 3 | 4 | 5 |
| Q13h) To increase employee acceptance of innovation | 1 | 2 | 3 | 4 | 5 |
| Q13i) To improve employee retention | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| Q13j) To identify and/or protect strategic knowledge present in the department | 1 | 2 | 3 | 4 | 5 |
| | | | | | |
| **Q14. Please indicate the effectiveness of the following knowledge management practices in the department** | **Very effective** | **Effective** | **Somewhat effective** | **Little Effective** | **Not effective at all** |
| Q14a) Increase our knowledge-sharing horizontally (across departments, functions or business units) | 1 | 2 | 3 | 4 | **5** |
| Q14b) Increase our knowledge-sharing vertically (up the department hierarchy) | 1 | 2 | 3 | 4 | 5 |
| Q14c) Improve employee efficiency or productivity | 1 | 2 | 3 | 4 | 5 |
| Q14d) Improve skills and knowledge of employees | 1 | 2 | 3 | 4 | 5 |
| Q14e) Improve relationships with healthcare services recipients | 1 | 2 | 3 | 4 | 5 |
| Q14f) Help us add new healthcare services | 1 | 2 | 3 | 4 | 5 |
| Q14g) Increase our adaptation of service to citizens' requirements and needs | 1 | 2 | 3 | 4 | 5 |
| Q14h) Increase flexibility in healthcare service delivery and innovation | 1 | 2 | 3 | 4 | 5 |
| Q14i) Prevent duplicate research and development | 1 | 2 | 3 | 4 | 5 |
| Q14j) Improve our corporate organisation memory | 1 | 2 | 3 | 4 | 5 |
| Q14k) Increase our ability to capture knowledge from public research institutions including universities and government laboratories (establishments) | 1 | 2 | 3 | 4 | 5 |

| **SECTION E: RESEARCH QUESTION 4** | | | | | |
|---|---|---|---|---|---|
| **RQ4- KNOWLEDGE CREATION/ ACQUISITION, SHARE/TRANSFER, RETENTION/STORAGE AND APPLICATION/USE** | | | | | |
| **Q15. Indicate your level of agreement to the following statement** | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** |
| **Knowledge Creation** | | | | | |
| Q15a) New team members are allowed time to assimilate the knowledge that has been created | 1 | 2 | 3 | 4 | |
| Q15b) I regularly attend conferences/ workshops/seminars related to my field of expertise. | 1 | 2 | 3 | 4 | 5 |
| Q15c) I interact regularly with a wide network of contacts within my field. | 1 | 2 | 3 | 4 | 5 |
| Q15d) Mentoring of new team members is encouraged | 1 | 2 | 3 | 4 | 5 |
| Q15e) I have access to both local and international standards and working procedures. | 1 | 2 | 3 | 4 | 5 |
| Q15f) The company offers a learning environment which facilitates innovation | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| Q15g) My performance is assessed regularly by my immediate supervisor and corrective measures to improve my performance are discussed | 1 | 2 | 3 | 4 | 5 |
| Q15h) We regularly discuss problems, failures and doubts in my team and organisation | 1 | 2 | 3 | 4 | 5 |
| Q15i) The department is open to new ideas and insights to redesigning work processes and design. | 1 | 2 | 3 | 4 | 5 |
| Q15j) Employees have an opportunity to work on new projects and programs, depending on their experience, qualifications and availability. | 1 | 2 | 3 | 4 | 5 |
| Q15k) Developing new knowledge and testing new ideas is assessed and rewarded in my department. | 1 | 2 | 3 | 4 | 5 |
| Q15l) The department encourages learning groups, where members can discuss their work experiences and strategies. | 1 | 2 | 3 | 4 | 5 |
| Q15m) In my department, important issues are explored, using scenarios or simulation techniques. | 1 | 2 | 3 | 4 | 5 |
| Q15n) Management information systems, Internet, Intranet, Knowledge Repository tools are used for knowledge creation. | 1 | 2 | 3 | 4 | 5 |
| Q15o) The department use mentoring, coaching, job rotation and CoP for knowledge creation | 1 | 2 | 3 | 4 | 5 |

| Q16. Indicate your level of agreement to the following statement | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| **Knowledge Acquisition** | | | | | |
| Q16a) I am adequately trained to carry out my daily duties | 1 | 2 | 3 | 4 | 5 |
| Q16b) The culture of learning from each other exists in the department | 1 | 2 | 3 | 4 | 5 |
| Q16c) Long serving/experienced employees are used to enhance the knowledge base of the team | 1 | 2 | 3 | 4 | 5 |
| Q16d) I have an opportunity to do other related jobs in the department to enhance my knowledge (job rotation) | 1 | 2 | 3 | 4 | 5 |
| Q16e) Documents providing information regarding new knowledge created are periodically circulated in the team | 1 | 2 | 3 | 4 | 5 |
| Q16f) The data and information are disseminated on a regular basis through both electronic and traditional information channels | 1 | 2 | 3 | 4 | 5 |
| Q16g) I appreciate lessons learnt sent to me in my area of responsibility. | 1 | 2 | 3 | 4 | 5 |
| Q16h) Employees are encouraged to be part of external professional networks and associations. | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| Q16i) In this organisation we collect information about the needs and wishes of our customers. | 1 | 2 | 3 | 4 | 5 |
| Q16j) If important knowledge is not available, my institution buys it, e.g. standards, journals, research reports. | 1 | 2 | 3 | 4 | 5 |
| Q16k) Our Organisation institution employs new staff members who possess the missing knowledge when required | 1 | 2 | 3 | 4 | 5 |
| Q16l) Our organisation does research to explore future possibilities and new knowledge. | 1 | 2 | 3 | 4 | 5 |
| Q16m) Employees attends courses, training programs and seminars to remain up to date. | 1 | 2 | 3 | 4 | 5 |
| Q16n) Our competitors inspire us to develop new methods and approaches to delivering training. | 1 | 2 | 3 | 4 | 5 |
| | | | | | |
| **Q17. Indicate your level of agreement to the following statement** | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** |
| **Knowledge Retention/Storage** | | | | | |
| Q17a) Databases/centralised knowledge repository of good work practices, lessons learnt are available and updated in the department | 1 | 2 | 3 | 4 | 5 |
| Q17b) Project learning (success or failures) reports are accessible and available to other team members. | 1 | 2 | 3 | 4 | 5 |
| Q17c) We have ICT infrastructure to access and store lessons learnt and information in general | 1 | 2 | 3 | 4 | 5 |
| Q17d) Departmental operational policies/procedures/work manuals are located in a central place accessible to all members of staff | 1 | 2 | 3 | 4 | 5 |
| Q17e) Knowledge assets (e.g. customer details) are stored and preserved | 1 | 2 | 3 | 4 | 5 |
| Q17f) In our organisation we use brainstorming sessions to find solutions for problems | 1 | 2 | 3 | 4 | 5 |
| Q17g) In our organisation we review failures and successes and lessons learnt are set down. | 1 | 2 | 3 | 4 | 5 |
| Q17h) We use handbooks and work guidelines, which are up to date | 1 | 2 | 3 | 4 | 5 |
| Q17i) Changes in procedures, handbooks, etc. is communicated throughout the organisation to the correct team members | 1 | 2 | 3 | 4 | 5 |
| Q17j) Our organisation has documented specific knowledge and skills of individuals. | 1 | 2 | 3 | 4 | 5 |
| Q17k) Experts in our organisation are encouraged to make explicit the methods they use in a step-by-step description. | 1 | 2 | 3 | 4 | 5 |
| Q17l) Retirements negatively affect knowledge management in the organisation | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| Q17m) The department use job rotation, mentorship, coaching, CoP, discussion forums, job rotation, job promotion and knowledge repository for knowledge retention. | 1 | 2 | 3 | 4 | 5 |
| | | | | | |
| **Q18. Indicate your level of agreement to the following statement** | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** |
| **Knowledge Share/Transfer** | | | | | |
| Q18a) Work related knowledge is my personal competitive advantage. | 1 | 2 | 3 | 4 | 5 |
| Q18b) I often share my work-related knowledge with other team members. | 1 | 2 | 3 | 4 | 5 |
| Q18c) We have a budget for professional development and training in our department. | 1 | 2 | 3 | 4 | 5 |
| Q18d) We have a technological infrastructure to promote a knowledge-sharing environment within our department. | 1 | 2 | 3 | 4 | 5 |
| Q18e) I am willing to share my knowledge and experience with others | 1 | 2 | 3 | 4 | 5 |
| Q18f) I am rewarded for sharing my knowledge with others. | 1 | 2 | 3 | 4 | 5 |
| Q18g) Resignations are the main inhibitors to knowledge transfer in the department. | 1 | 2 | 3 | 4 | 5 |
| Q18h) New members of staff are assigned to mentors who help them to find their way in the department. | 1 | 2 | 3 | 4 | 5 |
| Q18i) A lot of knowledge is distributed in informal ways outside the office settings, e.g. in the corridors, tea-rooms, etc. | 1 | 2 | 3 | 4 | 5 |
| Q18j) We have meetings at which professional matters are discussed regularly. | 1 | 2 | 3 | 4 | 5 |
| Q18k) Colleagues regularly share positive experiences and successful projects undertaken. | 1 | 2 | 3 | 4 | 5 |
| Q18l) We have a peer review system which allows opportunities for discussing work methodologies. | 1 | 2 | 3 | 4 | 5 |
| Q18m) There is opportunities for job rotation based on one's know-how, thereby ensuring knowledge distribution. | 1 | 2 | 3 | 4 | 5 |
| Q18n) Senior managers in the department often share operational knowledge with employees to help them carry out their work | 1 | 2 | 3 | 4 | 5 |
| Q18o) There is generally a free flow of information in the department. | 1 | 2 | 3 | 4 | 5 |
| Q18p) The perception of sharing knowledge in the department is that it facilitates the completion of tasks, accomplish tasks quickly, improves job performance, enables me to react quickly to change, useful for my job overall and speeds up decision-making | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| Q18q) The specific knowledge that need is found only among experts in the department rather than in the central location | 1 | 2 | 3 | 4 | 5 |
| Q18r) The regular activities/tasks that I perform help me to share my experience/knowledge with other members in the department. | 1 | 2 | 3 | 4 | 5 |
| | | | | | |
| **Q19. Indicate the extent to which you have used the following knowledge transfer activities in your team/organisation** | **To a very large extent** | **To a large extent** | **To some extent** | **To a little extent** | **Not to any extent at all** |
| Q19a) Succession planning | 1 | 2 | 3 | 4 | |
| Q19b) Communities of practice | 1 | 2 | 3 | 4 | 5 |
| Q19c) Coaching | 1 | 2 | 3 | 4 | 5 |
| Q19d) Knowledge repositories | 1 | 2 | 3 | 4 | 5 |
| Q19e) Story telling | 1 | 2 | 3 | 4 | 5 |
| Q19f) Orientation, general and job specific | 1 | 2 | 3 | 4 | 5 |
| Q19g) Mentorship, formal and informal | 1 | 2 | 3 | 4 | 5 |
| Q19h) Discussion forums are organised in the department/organisation on time basis in order to encourage people' knowledge transfer. | 1 | 2 | 3 | 4 | 5 |
| Q19i) Knowledge-sharing is practised and emphasised in our company | 1 | 2 | 3 | 4 | 5 |
| Q19j) I am willing to share my knowledge and new ideas with other co-workers | 1 | 2 | 3 | 4 | 5 |
| Q19k) My manager encourages the sharing of knowledge among team members | 1 | 2 | 3 | 4 | 5 |
| Q19l) My organisation provide the opportunity for employees to share their knowledge | 1 | 2 | 3 | 4 | 5 |
| Q19m) My manager help me to find solutions to difficult problems | 1 | 2 | 3 | 4 | 5 |
| Q19n) The rewards I receive are proportionate to my contribution | 1 | 2 | 3 | 4 | 5 |
| Q19o) I feel appreciated when I have invested my time and energy in the sharing of knowledge | 1 | 2 | 3 | 4 | 5 |
| Q19p) I feel loss of power and security about my job when I share my knowledge | 1 | 2 | 3 | 4 | 5 |
| Q19q) I need to have to trust my co-workers first before I share my knowledge | 1 | 2 | 3 | 4 | 5 |
| Q19r) I share my knowledge with co-workers who have helped me in the past | 1 | 2 | 3 | 4 | 5 |
| Q19s) My interaction with co-workers affect the sharing of your knowledge with them in a positive manner | 1 | 2 | 3 | 4 | 5 |
| Q19t) My company invest in technology to promote the sharing of knowledge | 1 | 2 | 3 | 4 | 5 |
| | | | | | |
| **Q20. Indicate your level of agreement to the following statement** | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** |
| **Knowledge Application/Use** | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Q20a) I am able to use and apply the knowledge I have acquired from training sessions etc. | 1 | 2 | 3 | 4 | 5 |
| Q20b) Remote teams are supported adequately in terms of access to knowledge and networks | 1 | 2 | 3 | 4 | 5 |
| Q20c) Knowledge is applied and shared successfully across all departments | 1 | 2 | 3 | 4 | 5 |
| Q20d) Selling knowledge, such as through consultancies, attracts explicit attention from our institution. | 1 | 2 | 3 | 4 | 5 |
| Q20e) New knowledge is being promoted externally in the market through the dissemination of research findings. | 1 | 2 | 3 | 4 | 5 |
| Q20f) Experiences and feedback of customers is used to improve our e-service delivery. | 1 | 2 | 3 | 4 | 5 |
| Q20g) The existing know-how currently in the organisation is used in a creative manner in new applications. | 1 | 2 | 3 | 4 | 5 |
| Q20h) Employees promote new knowledge internally within the organisation. | 1 | 2 | 3 | 4 | 5 |
| Q20i) One of our strong qualities is combining our specialisations in multi-disciplinary teams or CoP. | 1 | 2 | 3 | 4 | 5 |
| Q20j) We have a system to eliminate dysfunctional beliefs and attitudes at our organisation | 1 | 2 | 3 | 4 | 5 |

| **SECTION F: RESEARCH QUESTION 4** | | | | | |
|---|---|---|---|---|---|
| **RQ4- KNOWLEDGE MANAGEMENT PERFORMANCE** | | | | | |
| **Q21. Indicate your level of agreement to the following statements** | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** |
| **OP** | | | | | |
| Q21a) Strategic goals of the department are explained to employees | 1 | 2 | 3 | 4 | **5** |
| Q21b) The department's employees participate in setting the strategic goals of the department | 1 | 2 | 3 | 4 | 5 |
| Q21c) The department's vision and mission are aligned with employees' performance measurements | 1 | 2 | 3 | 4 | 5 |
| Q21d) The employees understand the broad objectives of the department's healthcare strategy | 1 | 2 | 3 | 4 | 5 |
| Q21e) The employees are aware of the key success factors of the department and healthcare strategy | 1 | 2 | 3 | 4 | 5 |
| Q21f) Training programs are provided to employees | 1 | 2 | 3 | 4 | 5 |
| Q21g) Performance of this organisation has been excellent in meeting its goals | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| Q21h) Employees are always motivated with good team spirit | 1 | 2 | 3 | 4 | 5 |
| Q21i) The department's financial performance targets are achieved | 1 | 2 | 3 | 4 | 5 |
| Q21j) The department's image is seen in a positive light | 1 | 2 | 3 | 4 | 5 |
| Q21k) The department's procedures were followed easily to achieve goals | 1 | 2 | 3 | 4 | 5 |
| Q21l) The department meets citizens' healthcare needs | 1 | 2 | 3 | 4 | 5 |
| Q21m) As an employee at the department, I am happy with the key performance objectives that are set. | 1 | 2 | 3 | 4 | 5 |
| Q21n) The line manager at the department continuously monitors the performance of the employees against set targets | 1 | 2 | 3 | 4 | 5 |
| Q21o) The department offers effective developmental programs for poor performers to enhance their performance at work | 1 | 2 | 3 | 4 | 5 |
| Q21p) At the department, every employee's performance is evaluated regularly | 1 | 2 | 3 | 4 | 5 |
| Q21q) At the department, employees are evaluated fairly without any bias. | 1 | 2 | 3 | 4 | 5 |
| Q21r) As an employee at the department, I am happy with my evaluation performance rating. | 1 | 2 | 3 | 4 | 5 |
| Q21s) The department offers rewards to employees who meet their set goals to motivate them. | 1 | 2 | 3 | 4 | 5 |

| Q22. Indicate your level of agreement to the following statements | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| **Healthcare Service Delivery** | 1 | 2 | 3 | 4 | **5** |
| Q22a) The department had a good service delivery rating before the major public-sector reform initiatives in 1994 | 1 | 2 | 3 | 4 | 5 |
| Q22b) The department had good productivity levels ratings before the 1994 major public-sector reform initiatives. | 1 | 2 | 3 | 4 | 5 |
| Q22c) The department achieves daily healthcare service targets | 1 | 2 | 3 | 4 | 5 |
| Q22d) We carry out market research among public healthcare users before we introduce new healthcare services to the market. | 1 | 2 | 3 | 4 | 5 |

| Q23. Indicate your level of agreement to the following statements | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| **Organisational Culture** | 1 | 2 | 3 | 4 | **5** |
| Q23a) The relationship I have with my boss help in the flow of information. | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| Q23b) I need to pass through my superiors in the office whenever information is sought. | 1 | 2 | 3 | 4 | 5 |
| Q23c) Management in the department encourage people to reflect on information and data and reframe these at the strategic level | 1 | 2 | 3 | 4 | 5 |
| Q23d) Employees are encouraged to exchange information and knowledge for solving problems in the department | 1 | 2 | 3 | 4 | 5 |
| Q23e) The employees do influence the management decisions related to work | 1 | 2 | 3 | 4 | 5 |
| Q23f) To do my work when I am stuck - I often consult my business unit manager. | 1 | 2 | 3 | 4 | 5 |
| Q23g) To do my work when I am stuck - I often make use of the documented procedures within the department. | 1 | 2 | 3 | 4 | 5 |
| Q23h) To do my work when I am stuck - I often consult other business units within the department | 1 | 2 | 3 | 4 | 5 |
| Q23i) To do my work when I am stuck - I often consult colleague from other business units. | 1 | 2 | 3 | 4 | 5 |
| Q23j) The employees hold formal staff meetings at the department | 1 | 2 | 3 | 4 | 5 |
| Q23k) The department has a knowledge management department. | 1 | 2 | 3 | 4 | 5 |
| Q23l) There is scope to develop skills and abilities | 1 | 2 | 3 | 4 | 5 |
| Q23m) I receive formal evaluation of my work. | 1 | 2 | 3 | 4 | 5 |
| Q23n) I receive in service training on continual bases | 1 | 2 | 3 | 4 | 5 |
| Q23o) The company presents induction courses for both management and workers | 1 | 2 | 3 | 4 | 5 |
| Q23p) Promotions is on the basis of qualification and experience | 1 | 2 | 3 | 4 | 5 |
| Q23q) I have a good relationship with my co-workers | 1 | 2 | 3 | 4 | 5 |
| Q23r) My supervisor offers constructive feedback and comments in my performance review | 1 | 2 | 3 | 4 | 5 |
| Q23s) There is a good communication within the company | 1 | 2 | 3 | 4 | 5 |
| Q23t) I have the authority to carry out the responsibility assigned to me | 1 | 2 | 3 | 4 | 5 |
| Q23u) My work environment is satisfactory | 1 | 2 | 3 | 4 | 5 |
| Q23v) The department's culture is conducive to spending time with colleagues and meeting people | 1 | 2 | 3 | 4 | 5 |
| Q23w) There is platform and culture that enables me to freely share information with others in the organisation | 1 | 2 | 3 | 4 | 5 |

| Q24. Indicate your level of agreement to the following statements | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|---|

| **OS** | 1 | 2 | 3 | 4 | **5** |
|---|---|---|---|---|---|
| Q24a) The department's structure or that of a related healthcare entity allow and support employees to accomplish their task? | 1 | 2 | 3 | 4 | 5 |
| Q24b) The department provide a better environment for improving the work knowledge of the employees? | 1 | 2 | 3 | 4 | 5 |
| Q24c) Sharing of information happens constantly with other business units in formal ways to enable me to do my job well. | 1 | 2 | 3 | 4 | 5 |
| Q24d) Sharing of information happens constantly with other colleagues in the department in formal ways to enable me to do my job well. | 1 | 2 | 3 | 4 | 5 |
| Q24e) There is ample opportunities for me to interact with my peers in and outside the organisation | 1 | 2 | 3 | 4 | 5 |
| Q24f) There is a formal mentoring program in the organisation | 1 | 2 | 3 | 4 | 5 |

| **Q25. Indicate your level of agreement to the following statements** | **Strongly agree** | **Agree** | **Neutral** | **Disagree** | **Strongly disagree** |
|---|---|---|---|---|---|
| **Information Technology** | 1 | 2 | 3 | 4 | **5** |
| Q25a) The department use modern technologies to enhances the environment for knowledge management practice | 1 | 2 | 3 | 4 | 5 |
| Q25b) The department make periodic knowledge contributions to the shared repository | 1 | 2 | 3 | 4 | 5 |
| Q25c) The employees are made aware of the files in the system that are relevant to their work | 1 | 2 | 3 | 4 | 5 |
| Q25d) The Communities of practice (CoP) is formally recognised as a tool or technology for knowledge transfer | 1 | 2 | 3 | 4 | 5 |
| Q25e) The discussion forums are formally recognised as a tool or technology for knowledge transfer | 1 | 2 | 3 | 4 | 5 |
| Q25f) The central knowledge repository is formally recognised as a tool or technology for knowledge transfer | 1 | 2 | 3 | 4 | 5 |
| Q25g) The job rotation is formally recognised as a tool or technology for knowledge transfer | 1 | 2 | 3 | 4 | 5 |
| Q25h) The job promotion is formally recognised as a tool or technology for knowledge transfer | 1 | 2 | 3 | 4 | 5 |
| Q25i) There is technological infrastructure that allows free and easy access to knowledge | 1 | 2 | 3 | 4 | 5 |

Adapted from: Creswell (2007), Mavodza (2010) and Ekeke and Fuller-Love (2011)

Thank you for completing this survey. Your time is valuable; therefore, your contribution to this study is highly appreciated.

## Appendix G: GDH Interview protocol with open- ended questionnaire

Dear Participant,

I am gathering data for a research project in fulfilment of my Ph.D. studies at the University of South Africa (UNISA), College of Science, Engineering and Technology, School of Computing, P. O. Box 392, UNISA 0003, UNISA - Campus, Preller Street, Muckleneuk Ridge, Pretoria, South Africa. I have attached a narrative discussion of my thesis, which provides some information about the study I would like to conduct at the GDH. The title of my research study is, "**The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health."**

The specific objectives of this study are:

a) To investigate the information and knowledge practices at the GDH;
b) To investigate to what extent the concept of knowledge management is understood at the GDH;
c) To determine the need for knowledge management practices at the GDH by investigating what knowledge assets exist and identifying gaps;
d) To determine the need for knowledge management at the GDH to increase productivity, improve OP and healthcare service delivery;
e) To determine what knowledge identification and creation, knowledge storing, sharing and transfer, knowledge retention and use policies are in place in the GDH;
f) To determine the extent to which the GDH organisational culture encourages information flow and sharing; and
g) To propose the implementation of knowledge management strategies and initiatives as a solution to the current challenges and to improve OP and healthcare service delivery.

Please assist me by completing and submitting the survey provided before 30/05/2014. The survey is not intrusive and takes on average 20 minutes to complete. At this point, I have successfully submitted my research proposal to UNISA. The following is a brief overview of the study:

**Purpose of the study:**
The GDH is facing serious challenges in respect of OP and healthcare service delivery. These challenges are aggravated by public health challenges that include the burden of TB, HIV and AIDS, financial mismanagement and a shortage of key medical professionals. The improvement of healthcare service delivery is therefore overriding in the GDH, which needs effective strategies for successful and sustainable transformation in line with public-sector reform.

One possible solution to overcome the problem could be the use of knowledge management strategies and practices for successful transformation to improve OP and healthcare service delivery. The study aims to investigate the practical use of knowledge management for the transformation of the GDH into a high-performance organisation rendering effective healthcare services in the South African public-sector.

Thank you in anticipation for your support.

I can be reached by e-mail at 35161108@mylife.unisa.ac.za or

Time of interview: Date: ……/……../ 2014

Place: ……

Interviewee's position: ……

Interviewee's years of working experience: ……

Description of project:

**The improvement of OP and healthcare service delivery through knowledge management practices in the GDH**

Investigating knowledge management practices in the **GDH**

Questions:

**1)** Can you tell me what your job is all about?

**2)** What type of knowledge would you say you have about this organisation?

**3)** When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?

**4)** How did you acquire most of the skills and expertise that you have been using in your job over the past six months?

**5)** Where is most of the knowledge that you need to do your work located or stored?

**6)** Who owns the knowledge that you acquire in your present job?

**7)** How do members of staff share experiences and knowledge in this organisation?

**8)** How do you transfer your own personal knowledge to others?

**9)** How often do you make use of documented procedures to do your work when you encounter problems?

**10)** How open will you say your organisation is to suggestions from staff, especially when they air their opinions?

**11)** How will you describe the way knowledge is transferred between departments?

**12)** How do you tap into the knowledge of those leaving this organisation or retiring from it?

**13)** What is your opinion about the role of knowledge in improving performance?

**14)** Is there an informal avenue outside the formal office environment for staff to collaborate and interact?

**15)** Have you experienced a situation where a staff member has been reluctant to share knowledge?

**16)** What is the biggest barrier to your being able to store information that you receive efficiently and effectively?

**17)** How often do you share information with other business units in the department in formal ways?

**18)** What are the challenges in sharing information with people from other departments or divisions?

Adapted from: Creswell (2007: 136)

## Appendix H: Case-study protocol for GDH

The protocol defines the instruments and procedures to follow in conducting the case-study and guides the researcher in the data collection process.

| *Part 1: Introduction to the research* (*5 min)* |
|---|

A. **An overview of the case-study project** - this will include project objectives, case-study issues and presentations about the topic under study:

.

1. Case-study questions propositions
2. Theoretical framework for the case-study
3. Role of protocol in guiding the case-study investigator (Note that the protocol is a standardised agenda for the investigator's inquiry.)

B. **Field procedures** - reminders about procedures, credentials for access to data sources, location of those sources:

1. Names of GDH and related regional healthcare entities to be visited, including contact persons
2. Data collection plan (covers the calendar period for the visits, the amount of time to be used for each interview visit, questionnaire distribution, observations)
3. Expected preparation prior to visits (identifies specific documents to be reviewed and where they can be accessed)

C. **Case-study questions** - the questions that the investigator must keep in mind during data collection:

1. What do employees, managers and executive managers understand knowledge management to mean?
2. What is the level of knowledge of employees in various categories of employment?
3. What characteristics of organisational culture contribute to or inhibit knowledge management practices?
4. What are the knowledge needs of the GDH and its related regional healthcare entities?
5. What management issues arise from the practice of knowledge management at the GDH?
6. What knowledge creation, knowledge-sharing and knowledge application policies and practices are in existence at the GDH?
7. In what ways is knowledge management used to promote good governance, strategic decision-making, responsiveness and transparency in the GDH?
8. In what way is knowledge management used by employees in the face of the demands by the government public-sector reform initiatives?
9. What are the tools, methods and techniques used for knowledge creation, knowledge-sharing and knowledge application at the GDH?
10. What is the level of managerial commitment to knowledge management at the GDH?
11. What is the level of employees' commitment to knowledge management at the GDH?

12. What was the degree of decentralisation or centralisation of knowledge and information?
13. What resources were or will be needed for the facilitation of knowledge creation, sharing and application?
14. What additional resources will be needed now and in the future for the GDH to implement knowledge management practices?
15. In what ways is knowledge management practice used to create a collaborative working and knowledge-sharing organisational culture for the GDH?
16. Describe how the practice is to continue after the research study has ended.

Additional questions to make the study more explanatory:

17. How do the survey respondents view the availability of knowledge in comparison to other public-sector institutions?
18. How access to information and knowledge is made available?
19. How are the creation and sharing of knowledge encouraged and rewarded?
20. How will the GDH balance the need for the improvement of OP and healthcare service delivery with the need for knowledge management practices?
21. How does the GDH plan to implement knowledge management practices to meet the demand for improvement in OP and healthcare service delivery?

D. **A guide for the case-study report** - the outline and format for the report.
1. Determine the design for evaluating the study.
2. What part of the evaluation is implemented?
3. What are the outcome measures being used and what outcomes have been identified to date?

Adapted from Yin (2014); Riege (2003); Gibbert *et al.,* 2008)

## Appendix I: Permission to conduct research project

UNISA | college of science, engineering and technology

Kgabo Hendrik Badimo (35161108)
School of Computing
UNISA
Pretoria

2013-08-06

**Permission to conduct research project**

**Ref: 074/KHB/2013**

The request for ethical approval for your PhD in Information Systems research project entitled "Managing Gauteng department of Health Transformation through Knowledge Management." refers.

The College of Science, Engineering and Technology's (CSET) Research and Ethics Committee (CREC) has considered the relevant parts of the studies relating to the abovementioned research project and research methodology and is pleased to inform you that ethical clearance is granted for your study as set out in your proposal and application for ethical clearance.

Therefore, involved parties may also consider ethics approval as granted. However, the permission granted must not be misconstrued as constituting an instruction from the CSET Executive or the CSET CREC that sampled interviewees (if applicable) are compelled to take part in the research project. All interviewees retain their individual right to decide whether to participate or not.

We trust that the research will be undertaken in a manner that is respectful of the rights and integrity of those who volunteer to participate, as stipulated in the UNISA Research Ethics policy. The policy can be found at the following URL:
http://cm.unisa.ac.za/contents/departments/res_policies/docs/ResearchEthicsPolicy_apprvCounc_21Sept07.pdf

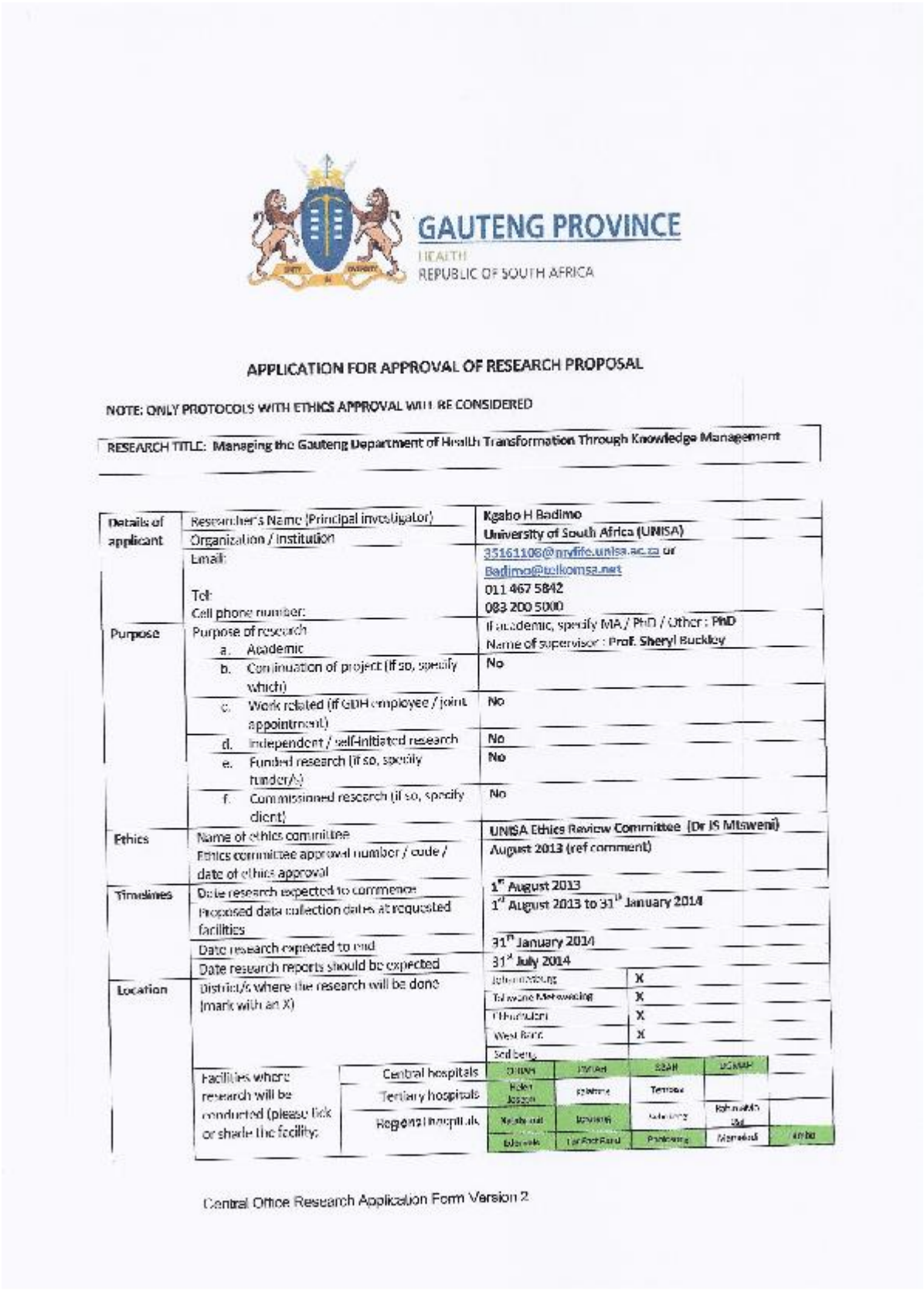
Please note that if you subsequently do a follow-up study that requires the use of a different research instrument, you will have to submit an addendum to this application, explaining the purpose of the follow-up study and attach the new instrument along with a comprehensive information document and consent form.

Yours sincerely

Chair: School of Computing Ethics Sub-Committee

University of South Africa
College of Science, Engineering and Technology
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone +27 12 429 6122 Facsimile +27 12 429 6848
www.unisa.ac.za/cset

## Appendix J: Application for approval of research proposal



GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

**APPLICATION FOR APPROVAL OF RESEARCH PROPOSAL**

**NOTE: ONLY PROTOCOLS WITH ETHICS APPROVAL WILL BE CONSIDERED**

**RESEARCH TITLE: Managing the Gauteng Department of Health Transformation Through Knowledge Management**

| | | |
|---|---|---|
| **Details of applicant** | Researcher's Name (Principal investigator) | **Kgabo H Badimo** |
| | Organization / Institution | **University of South Africa (UNISA)** |
| | Email: | 35161108@mylife.unisa.ac.za or Badimo@telkomsa.net |
| | Tel: | 011 467 5842 |
| | Cell phone number: | 083 200 5000 |
| **Purpose** | Purpose of research | If academic, specify MA / PhD / Other : **PhD** |
| | a. Academic | Name of supervisor : **Prof. Sheryl Buckley** |
| | b. Continuation of project (If so, specify which) | **No** |
| | c. Work related (if GDH employee / joint appointment) | **No** |
| | d. Independent / self-initiated research | **No** |
| | e. Funded research (If so, specify funder/s) | **No** |
| | f. Commissioned research (If so, specify client) | **No** |
| **Ethics** | Name of ethics committee | **UNISA Ethics Review Committee (Dr IS Mtsweni)** |
| | Ethics committee approval number / code / date of ethics approval | **August 2013 (ref comment)** |
| **Timelines** | Date research expected to commence | **1st August 2013** |
| | Proposed data collection dates as requested facilities | **1st August 2013 to 31st January 2014** |
| | Date research expected to end | **31st January 2014** |
| | Date research reports should be expected | **31st July 2014** |
| **Location** | District/s where the research will be done (mark with an X) | Johannesburg: X<br>Tshwane Metro: X<br>Ekurhuleni: X<br>West Rand: X<br>Sedibeng: |
| | Facilities where research will be conducted (please tick or shade the facility: | Central hospitals: Chris Hani Baragwanath, Helen Joseph, Steve Biko, Tembisa, Kalafong, Jubilee, Dr George Mukhari, Pholosong, Leratong, Sebokeng, Far East Rand, Natalspruit, Kopanong, Carletonville, Randfontein, Mamelodi, Witbank<br>Tertiary hospitals:<br>Regional hospitals: |

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | list CHCs / clinics) | District Hospitals | Sekhukhune | Dr Kenneth Kaunda | Bojanala Platinum | Ehlanzeni | Jubilee |
| | | | Mpumalanga | Ont | South Rand | Tshwane | Pixley ka Seme |
| | | CHCs and clinics | | | | | |
| | | Other / specialised | MCC, CCOD, CMS, SAMRC, AHPCSA, SANC, SADTC, SAPC and HPCSA | | | | |
| | Are these facilities included in the Department's list of 'over-researched' facilities? | | | | | | |
| Details of study | Research Topic | | Managing the Gauteng Department of Health Transformation Through Knowledge Management | | | | |
| | Aim | | Investigate the use of knowledge management strategies/policies by the Gauteng Department of Health for successful transformation to improve healthcare services delivery and business performance. The study aims to contribute to both the theoretical and practical use of knowledge management to improve in the delivery of healthcare services in the South African public sector context. | | | | |
| | Objectives | | To investigate the information practices at GDOH;<br>- To investigate to what extent the concept of knowledge management is understood at GDOH;<br>- To determine the need for knowledge management practices at GDOH by investigating what knowledge assets exist and identify the gaps;<br>- To determine the need for knowledge management at GDOH to increase productivity and improve business performance;<br>To determine what knowledge identification, knowledge creation, knowledge storing, knowledge-sharing, knowledge transfer, knowledge retention and knowledge use policies are in place in the GDOH;<br>- To determine the extent to which the GDOH encourages information flow and use of modern technologies; and<br>To propose the implementation of knowledge management strategies and initiatives as a solution to the current challenges and improved healthcare service delivery and business performance | | | | |
| | Type of study / design | | In order to arrive at a deeper understanding of knowledge management in this study, a combination of both quantitative and qualitative techniques using a mixed method approach will be pursued. | | | | |
| | Methodology (sample size / number of interviews / focus groups / file reviews / combination / interview length) | | Mixed methods approach, using both qualitative and quantitative approaches:<br>(1) The sampling approach in this study will be heavily purposive with elements of random sampling within | | | | |

| | | |
|---|---|---|
| | | the groups. Thus, the targeted population for this research will be all the permanent and contract employees in supervisory and managerial roles employed in the GDOH, selected hospitals and statutory health bodies operating in Gauteng Region A, who have been employed in these areas since 1994.<br>(2) Questionnaire – 15min (70% of the population) and electronic<br>(3) Interview – 30min (30% of the population) and face to face |
| Funding | Budget | None |
| | Source of funding | None |
| Logistics | What implications will the research have with regards to: | |
| | a. Space requirements | None |
| | b. Equipment | Desktop or Laptop |
| | c. Additional load on nursing / staff | None |
| | d. Support services | None |
| | e. Additional lab tests on patients<br>• Which lab will be used for tests?<br>• Who will do the tests?<br>• Who will pay for the tests? | None |
| | f. Use of Department's consumable s | None |
| | g. Additional OPD visits for patients | None |
| ?? | a. What measures will you implement to ensure that service delivery is not negatively affected? | Arranged consultation/appointments with targeted participants |
| | b. How will the sites be prepared to participate in your research | Arranged consultation/appointment with targeted participants employees |
| Dissemination | What is your research dissemination plan? | In the form of finished thesis and or publication through UNISA University Library and academic Media |
| Intellectual property and ownership | Have you read, understood and complied with the following Act:<br>*Intellectual Property Rights from Publicly Financed Research and Development Act (51/2008): Regulations* | YES |
| | a. Who will be the owner of the IP of the project? | University of South Africa (UNISA) |
| | b. Who will own the data? | University of South Africa (UNISA) |

COMMENTS

- The UNISA Ethical Clearance Application Form and The UNISA Ethical Clearance Review Form require that I receive approval from relevant authorities (GDOH) where the research involves the utilization of space, data, and/or facilities at institutions/organisations. It is therefore only when I have received approval from GDOH to conduct the research within the department that the clearance will be provided by the university ethical clearance committee.

- The statutory bodies mentioned as part of the facilities where the research will be conducted (MCC, COOD, CMS, SAMRC, AHPCSA, SANC, SADTC, SAPC and HPCSA) assumes that they are working directly or indirectly with the GDOH and/or targeted hospitals.

FOR OFFICE USE

| | |
|---|---|
| Date submitted | |
| Date reviewed | |
| Name of Reviewer | |
| Date approved | |

**Declaration by applicant**

I Kgabo H Badimo agree to conduct the above mentioned research as set out in the approved research proposal attached hereto, and confirm that the information therein is a true reflection of my / our work.

I will not hold the Department responsible for any damages, legal, financial or otherwise, during the course of the project.

I agree to keep all information obtained confidential, to use it only to fulfill the requirements of my PhD, will not publish or disseminate it beyond this purpose

I agree to inform the GDOH prior to the publication of any article(s) pertaining to the research conducted in the Department.

I agree to abide by the serious adverse event policy of the NDOH/GDOH

I hereby declare that the information supplied by me was correct. I fully understand the Intellectual Property Rights from Publicly Financed Research and Development Act, 2008 No. 51 of 2008 and subsequent amendments and regulations and agree to abide by them.

Signed (principal researcher)

Date: 02 August 2013

**Reviewer's comments**

**Recommended / not recommended**

Name

Signature

Date

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## Appendix K: Approval of Provincial Protocol Review Committee (PPRC)

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

**OUTCOME OF PROVINCIAL PROTOCOL REVIEW COMMITTEE (PPRC)**

| | |
|---|---|
| Researcher's Name (Principal investigator) | Kgabo Hendrik Badimo |
| Organization / Institution | University of South Africa, School of Computing |
| Research Title | Managing the Gauteng Department of Health transformation through knowledge management |
| Protocol number | P100813 |
| Outcome | **Approved** |
| Date resubmitted | N/A |
| Date of second review | N/A |
| Final outcome | N/A |
| Date of final outcome | N/A |

It is a pleasure to inform that the Gauteng Health Department has approved your study on "Managing the Gauteng Department of Health transformation through knowledge management" (P100813).

The Provincial Protocol Review Committee kindly requests that you to submit a report after completion of your study and present your findings to the Gauteng Health Department.

**Approves** / not approves

**Dr Bridget Ikalafeng**
**Provincial Protocol Review Committee (PPRC), Chairperson**

**Date:** 20/09/2013

## Appendix L: Informed consent form for a research project

UNISA

**INFORMED CONSENT FORM FOR A RESEARCH PROJECT**

| | |
|---|---|
| **Title of study:** | Managing the Gauteng Department of Health transformation through knowledge management. |
| **Principal investigator:** | Mr Kgabo H Badimo |
| **Institute:** | School of Computing, University of South Africa (UNISA) |

**Introduction:**

I am Mr Kgabo Badimo from the School of Computing at the University of South Africa (UNISA) and doing a research on the use of Knowledge Management for transformation. I want to identify how Gauteng Department of Health could use knowledge management strategies and principles for successful transformation for organizational performance to improve healthcare services delivery. Since you work for the Gauteng Department of Health, I would like to invite you to join this research study.

**Background information:**

Gauteng Department of Health is facing serious challenges in respect of healthcare service delivery. These challenges are aggravated by public health challenges that include the burden of TB, HIV and AIDS, financial mismanagement and a shortage of key medical professionals. These challenges are also partly as a result of the public sector reforms that have resulted in a significant increase in pressure on public service sectors and government departments to refine and improve the types and methods of services and service delivery in order to meet the needs of citizens. The improvement of healthcare service delivery is therefore overriding in the Gauteng Department of

1

Health, which needs effective strategies for successful and sustainable transformation in line with public sector reform.

One possible solution to overcome the problem could be the use of knowledge management strategies by the Gauteng Department of Health for successful transformation to improve healthcare services delivery. It is in the context of this that this study wants to look at the use of knowledge management and its techniques and policies, which are extremely useful for effectively accomplishing organisational transformation.

This study could lead to a better understanding of the extent to which knowledge management could be effective as a transformation tool for improvement in business performance and service delivery specific to the healthcare environment, and offer an important organisational resource for achieving and maintaining competitive advantage.

**Purpose of this research study**

**Procedures**

In this study we will ask few questions about yourself, the department and how you use knowledge management in the execution of your tasks. This will take about 15 minutes of your time to complete the questionnaire. We will also conduct interviews with a separate group of employees which will take 20 minutes where tape recording of the interview will be done.

**Possible risks or benefits**

There is no risk involved in this study except your valuable time. There is no direct benefit to you also. However, the results of the study may help us to suggest or propose knowledge management strategies to the Gauteng Department of Health to improve on making better and faster decisions, improved productivity, business performance and service delivery

**Right of refusal to participate and withdrawal**

You are free to choose to participate in the study. You may refuse to participate without any loss of benefit which you are otherwise entitled to. You may also withdraw any time from the study without any adverse effect or any loss of benefit. You may also refuse to answer some or all the questions if you don't feel comfortable with those questions.

**Confidentiality**

The information provided by you will remain confidential. Nobody except principal investigator will have an access to it. Your name and identity will also not be disclosed at any time. However the data may be seen by UNISA Ethical review committee and may be published in journals and elsewhere without giving your name or disclosing your identity.

**Available Sources of Information**

If you have any further questions you may contact Principal Investigator (Mr. Kgabo Badimo), on the following phone number 083 200 5000 or 011 467 5842.

**1. AUTHORIZATION**

I have read and understand this consent form, and I volunteer to participate in this research study. I voluntarily choose to participate, but I understand that my consent does not take away any legal rights in the case of negligence or other legal fault of anyone who is involved in this study. I further understand that nothing in this consent form is intended to replace any applicable South African Laws, Acts of Parliament, Legislations or local laws.

Participant's Name (Printed or Typed):

Siganature:.....

Date: .....

Principal Investigator's Signature:.....

Date:.....

## Appendix M: Medical Aid Insurance Companies in South Africa

| Medical Aid Insurance Companies | Website |
|---|---|
| Bestmed Medical Scheme | www.bestmed.co.za |
| Bonitas Medical Fund | www.bonitasmedicalfund.co.za |
| Cape Medical Plan | www.cmp.co.za |
| Community Medical Aid Scheme (Commed) | www.commed.co.za |
| Discovery Health Medical Scheme | www.discovery.co.za |
| Compcare Wellness Medical Scheme | www.compcare.co.za |
| Fedhealth Medical Scheme | www.fedhealth.co.za |
| Genesis Medical Scheme | www.qmed.co.za |
| Keyhealth Medical Scheme | www.keyheatthmedical.co.za |
| Liberty Medical Scheme | www.libmed.co.za |
| Hosmed Medical Aid Scheme | www.hosmed.co.za |
| Makoti Medical Scheme | www.makotiheatth.co.za |
| Medihelp Medical Scheme | www.medihelp.co.za |
| Medimed Medical Scheme | www.medimed.co.za |
| Medshield Medical Scheme | www.medshield.co.za |
| Momentum Health | www.momentum.co.za |
| National Independent Medical Aid Society (Nimas) | www.nimas.co.za |
| Pharos Medical Plan | www.pharosmp.co.za |
| Pro Sano Medical Scheme | www.prosano.co.za |
| Resolution Health Medical Scheme | www.resomed.co.za |
| Sizwe Medical Fund | www.sizwe.co.za |
| Selfmed Medical Scheme | www.selfmed.co.za |
| Spectramed Medical Scheme | www.spectramed.co.za |
| Suremed Health | www.suremedhealth.co.za |
| Thebemed Medical Scheme | www.thebemed.co.za |
| Topmed Medical Scheme | www.topmed.co.za |

## Appendix N: Interview Transcripts

Dear Participant,

I am gathering data for a research project in fulfilment of my Ph.D. studies at the University of South Africa (UNISA), College of Science, Engineering and Technology, School of Computing, P. O. Box 392, UNISA 0003, UNISA - Campus, Preller Street, Muckleneuk Ridge, Pretoria, South Africa. I have attached a narrative discussion of my thesis, which provides some information about the study I would like to conduct at the Gauteng Department of Health (GDH). The title of my research study is, "**The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health."**

The specific objectives of this study are:

h) To investigate the information and knowledge practices at the GDH;
i) To investigate to what extent the concept of knowledge management is understood at the GDH;
j) To determine the need for knowledge management practices at the GDH by investigating what knowledge assets exist and identifying gaps;
k) To determine the need for knowledge management at the GDH to increase productivity, improve OP and healthcare service delivery;
l) To determine what knowledge identification and creation, knowledge storing, sharing and transfer, knowledge retention and use policies are in place in the GDH;
m) To determine the extent to which the GDH organisational culture encourages information flow and sharing; and
n) To propose the implementation of knowledge management strategies and initiatives as a solution to the current challenges and to improve OP and healthcare service delivery.

Please assist me by completing and submitting the survey provided before 30/05/2014. The survey is not intrusive and takes on average 20 minutes to complete. At this point, I have successfully submitted my research proposal to UNISA. The following is a brief overview of the study:

**Purpose of the Study:**
The GDH is facing serious challenges in respect of OP and healthcare service delivery. These challenges are aggravated by public health challenges that include the burden of TB, HIV and AIDS, financial mismanagement and a shortage of key medical professionals. The improvement of healthcare service delivery is therefore overriding in the GDH, which needs effective strategies for successful and sustainable transformation in line with public sector reform. One possible solution to overcome the problem could be the use of knowledge management strategies and practices for successful transformation to improve OP and healthcare service delivery. The study aims to investigate the practical use of knowledge management for the transformation of the GDH into a high-performance organisation rendering effective healthcare services in the South African public sector.

Thank you in anticipation for your support.

I can be reached by e-mail at 35161108@mylife.unisa.ac.za or

Time of interview: Date: **18/04/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee B)**
Interviewee's years of working experience: **28 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

Investigating knowledge management practices in the **Gauteng Department of Health**

No Question and response

1. **Can you tell me what your job is all about?**

   My role in the department is to look at the healthcare policies interpretation, update and implementation as they are amended by the National Health Department from time to time. This also involves ensuring that adherence, compliance and monitoring. The policy sets out the main objectives of Government to assure quality in healthcare and to continuously improve the care that is being provided. The policies are designed to achieve the goal of a quality healthcare system and requires a national commitment to measure, improve and maintain high-quality healthcare for all its citizens. This involves measuring the gap between standards and actual practice and working out ways to close the gap.

2. **What type of knowledge would you say you have about this organisation?**

   I have been with this organisation for 5 years after having worked in the National Department of Health for 2 years as a chief Director for policy and planning. My knowledge about this department over and above Healthcare policies is about how employees are trained about changes in policy and the depth of understanding of the entire healthcare policies. The type of knowledge I have about this department is also about the departmental strategies and objectives, the medium and long term plans to achieve the desired outcomes as per the healthcare policies. We conduct regular visitations and customer survey to identify the effectiveness healthcare policies and how they impact patients. Yes, I have the knowledge of how the department is perceived by citizens out there and we prepare input to management for corrective actions.

3. **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**

   Most of the information requested from colleagues in other divisions of the department or other healthcare facilities and hospital in to verify the guidelines on policy interpretation and application. The colleagues also request information on policy and regulations updates as these do occur very frequently during the year. The healthcare policy and regulation changes taking place in our country's healthcare systems and the efforts to improve quality mean that colleagues and many health professionals are taking on new roles and responsibilities. Some colleagues are excited about these changes and the new opportunities they create. Others are unsure about whether their training has adequately prepared them for such dramatic changes. Also, while they understand the need for change, many of the colleagues and health professionals want a greater clarity and voice in the process of formulating policies for change. Colleagues and health professionals who are strongly dedicated to caring for patients, knowledgeable, well trained, committed to continuous quality improvement and secure in their employment, need to be further developed to improve the quality of healthcare.

4. **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**

As mentioned earlier, I acquired most of my skills from my previous job as a Chief Director at the National Department of Health. The training policy of the department was that providing quality care to patients requires training skilled health workers and establishing a culture that values lifelong learning and recognises its important role in improving quality. Therefore, continuous quality improvement skills and techniques were an integral part of the management training of employees and health workers. A learning framework for quality assurance was developed and the National Health Council used this framework to ensure that a critical mass of expertise is established at each level of care. Every training programme provided a strategy for on-going support and mentorship. Using my knowledge and expertise, we run continuous training and workshops throughout the department and regional healthcare entities. Consistent local action is needed to ensure that national policies, standards and guidelines are reflected in the delivery of healthcare services. The colleagues at the district health system are ideally positioned to facilitate this local action, because they are close enough to the community to be responsive to their needs and they are a powerful mechanism for improving the quality of healthcare. The Level II (Regional), Level III (Tertiary) and Specialised Hospitals also do participate on the workshops and training sessions and also do receive specialised attention. The need for action at the local and hospital level demands that competent health professionals are available to assure quality in health care and to continuously improve the care that is being provided. Competent and skilled health professionals can only be obtained by continual training and professional development.

5. **Where is most of the knowledge that you need to do your work located or stored?**

Most of the information is stored in the department computers. Knowledge in the department mostly reside with experienced and senior employees. However, most of the old and new healthcare legislation is stored in files and databases in the system. All departments and employees have access to an extensive pool of knowledge - whether this is their understanding healthcare policies or patients' needs and the department's operational plans, strategies and objectives or healthcare system and departmental business. The way the department gathers, shares and exploits this knowledge is central to our ability to develop successfully. The management of this knowledge and information can benefit everyone in the department.

6. **Who owns the knowledge that you acquire in your present job?**

The information is owned by the department, it is the property of the department and there are department policies that governs the management and use of the department's information. However, the experience and knowledge attained from doing my job is mine because it is not documented anywhere. This is where we as a department have a challenge particularly when we lose our more experience staff for whatever reason. Nevertheless, useful and important knowledge already exists in your business in the form of experienced and more knowledgeable employees, the processes for our healthcare services, files of documents held digitally and on paper, operational plans for future activities, such as strategies for new healthcare services.

7. **How do members of staff share experiences and knowledge in this organisation?**

How staff share information is determined by the practices in various departments. This could be through meetings, mentoring, training and workshops. The most regularly used method of sharing information is through our internal website and emails. Some of the sharing is the formal top-down approach where an instruction or formal memo is send out

to all staff. There is also a lot of and informal knowledge and experience sharing outside the formal departmental structure that fills the gaps, maintains the linkages and handles the onetime situations. Indeed, informal learning also takes place through daily social interactions such as participation in group activities, working alongside others, tackling challenging tasks and working with customers and patients. The success of these forms of informal learning is highly dependent upon our environment and the quality of our human relationships in the workplace

8. **How do you transfer your own personal knowledge to others?**

As an individual I manage information that I receive and, make sense of it and share with others. Sharing is important for our own sense-making. It grounds our thinking in reality. Nobody can steal our knowledge anyway. Sharing knowledge is informal but it's also more robust. This is what many of us already do, with blogs and social media. I also use discussions and "story telling" describing a similar experience whereby a method or technique was developed or used to solve a problem.

9. **How often do you make use of documented procedures to do your work when you encounter problems?**

Very often. All the government legislation and regulations are published and saved on hardcopy form. Although The use of electronic mail (e-mail) is increasingly important for both professional and private communication, e-mail cannot be 100% secure or confidential. We always follow the local protocols for keeping computer records confidential and always apply the Standard Operating Procedure. Documented procedures provide information about the documents which contain healthcare legislation and guidelines. Therefore, it is critically important to always refer to the documented procedures on how to implement healthcare practices.

10. **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**

This is the public sector. Employees encounter governments "as they are," that is, governments with distinct structures; in cultures with rich histories and traditions; in sets of organisations characterized by complex, interlocking processes; and in institutional environments composed of sedimentary layers of legislation, practices and politics. Practically, effective communication is critical to running a good organisation. However, communicating well is easier said than done in our environment. Because of the bureaucracy and protocol driven organisation like government department, there is very little encouragement to voice one's opinion but to execute according to policy without questioning. Management do not often meet let alone socialise with junior staff. Therefore, any communication with staff is mostly top-down.

11. **How will you describe the way knowledge is transferred between departments?**

Knowledge is mostly communicated or transferred through making information available on the electronic media (emails and intranet). Also, the use of departments documents which are often inaccessible because they are managers' offices. There are also training and workshops which our staff do attend from time to time including regular meetings. However, it is difficult to classify this as knowledge sharing as very little interaction and teamwork is encouraged for employees to share what they have learn among themselves to resolve problems. There is no culture of knowledge sharing knowledge or transferring knowledge. Employees do what they have to do as directed in a mechanical way with no innovative way of doing things.

12. **How do you tap into the knowledge of those leaving this organisation or retiring from it?**

No. “What knowledge?” I get the sense that no one including management believe that the department lose any knowledge when an employee leaves. The belief is that information is left behind in computers or department files. We do not even have HR practices where we conduct exit interviews or handover processes. It’s very pathetic. In the current situation, we even have employees who are older and more experienced being offered packages to take early retirement mainly to make way for younger black employees. This is very sad because older employees carry with them a lot of knowledge about healthcare services. This ultimately led to a drop in good service delivery and professionalism in the way we run the department. The loss of healthcare professional professionals is one such example – when they leave, they leave with their skills and knowledge

13. **What is your opinion about the role of knowledge in improving performance?**

Like I have mentioned to you, if you do not have knowledge you will never learn and you cannot be experienced. Therefore, the impact of this most often will be lack or lack of employee performance. Poor employee performance will lead to general department poor performance. Losing experienced employees, not sharing knowledge in the department will certainly result in poor OP. The role of knowledge in improving performance in the department is crucial. We need to retain knowledgeable and experience employees and let them show and impart their knowledge to younger employees as and when they join the department. We need to capture this knowledge and make it accessible to new employees so that they can use this over and above the written policy documents and healthcare regulations.

14. **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**

I am not sure about that. However, as I have indicated earlier, there are meetings and workshops which have more of a formal structure. We do not have canteens or social facilities and forums in the department where employees could sit and talk about their work and everything and anything.

15. **Have you experienced a situation where a staff member has been reluctant to share knowledge?**

Yes, quite often and this is a serious problem. This is an inherent problem within the department and public sector in general. While employees are supposed to share their knowledge with other employees for the benefit of the company and to resolve complex issues, some employees within the department often find a reason to keep that knowledge to themselves. Perhaps they believe that they will lose some status or power; sometimes employees who share knowledge will then be judged or evaluated based on that knowledge in the worst cases they can also be reprimanded; and often employees who don’t trust their colleagues in the department will be reluctant to share knowledge. There are other situational factors at play as ell namely that the knowledge is complex, the knowledge is not task-related, or there is no culture of knowledge sharing in the organisation — will also reduce knowledge sharing.

16. **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**

Our biggest barrier I would say is the organisational policy and directives to storing information received more efficiently and effectively. Also, poor tools and technology are the biggest barriers to storing information. Because of the way information confidentiality concept is applied generally within the department and perhaps generally in government, information is often locked in cabinets and offices. This manner of storing information is very old and not cost effective at all particularly in this information, knowledge and digital era.

17. **How often do you share information with other business units in the department in formal ways?**

Always and very often. This is precisely my role within the department to ensure that all healthcare policies and regulations are known and are implemented. Therefore, as I have mentioned earlier, we hold regular workshops, training as well as updating information on our intranet. In this way, information is shared to all employees in the department.

18 **What are the challenges in sharing information with people from other departments or divisions?**

There are many challenges. For example, people have a lot of work to do. If they don't truly underhand the importance of collaboration, they won't share information and knowledge. Information sharing is essential for collaborative group work. My view is that these challenges in information sharing in our department are influenced by inter-departmental, inter-cultural and inter-disciplinary differences which exist in the department. The biggest challenge is the silo operations within the department which is a leadership problem. If leadership does not understand the importance of collaboration and sharing information, it will be difficult for the remainder of the department healthcare operations team to make progress in the endeavour. It is difficult to build a knowledge sharing program without understanding what one has set out to build. Leadership within the department needs to embrace the concept. Further, leadership needs to outline and articulate a strong vision and a high-level process for information sharing. This will give information sharing program credibility within the department and empowers the healthcare operations personnel to accomplish the information sharing goals set for them by leadership. The other challenge we have is poor technology and poor IT platform to share information. The department must invest in the technology that facilitates information sharing something that we currently do not have in the department. Other challenges include lack of openness to sharing, no proper organisational guidelines to sharing information and the politicised and bureaucratic procedures involved in sharing information.

Time of interview: Date: **25/04/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee U)**
Interviewee's years of working experience: **10 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

Investigating knowledge management practices in the **Gauteng Department of Health**

No Question and response

1. **Can you tell me what your job is all about?**

My role as the CIO or Chief Director for communication and Information Technology in the department is Firstly and most importantly, make executive decisions regarding the purchase of IT equipment from suppliers or the creation of new systems; design an ICT strategy and ICT policy for the department that covers future proofing, procurement and the external and internal standards laid out by a department. I am also responsible for the ICT policy, detailing how ICT is utilised and applied within the department. In short I could say that my direct role is to provide vision and leadership for developing and implementing information technology initiatives that align with the mission of the department of health. I direct the planning and implementation of enterprise IT systems in support of the department of health's operations in order to improve OP and cost effectiveness. I am responsible for all aspects of the department of health's information technology and systems.

2. **What type of knowledge would you say you have about this organisation?**

I have been with this organisation for 5 years after having worked in the National Department of Health in Limpopo for 3 years as a chief Director for ICT. My knowledge about this department is how the department provides ICT services to automate various business processes in the department and related regional healthcare facilities. The type of knowledge includes the IT infrastructure at the department of health, IT platform deployed at the department of health, the various S/W applications running on our systems, Network infrastructure and the type of hardware (desktops, servers, printers, storage devices, etc.) in the department. Apart from ICT, other type of knowledge I have about this department is also about the departmental strategies and objectives, operational plans, healthcare legislations and policies.

3. **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**

The requests for knowledge and information are more about assistance with operational and technical problems that are experienced by the users from time to time. We do a lot of support to ensure systems and data availability and to ensure that the equipment's are functioning and used optimally. The colleagues also normally request information on ICT policy and regulations regarding the use of social media within the department, password reset, data backup and restore, acquisition of H/W or S/W, development of new applications and customized reports. The support is necessary mainly because colleagues do not necessarily have IT skills and will forever asking for assistance.

4. **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**

Most of my skills and knowledge I have acquired through my studies at the university. I did B.Sc. [Hons] and M.Sc. in Information technology. I acquired most of my skills and working experience from my previous job as a general manager for government information technology at the Limpopo Department of Education. Some of the skills were acquired through ICT related training.

5. **Where is most of the knowledge that you need to do your work located or stored?**

Most of the information is stored in the department databases and servers. There are various support documentation and manual in this system as well as the IT suppliers' portals which we use to acquire more knowledge and information to resolve the technical and functional issues as and when they arise. In some instances, the information is stored on portable external hard drive or memory stick to allow for portability when we support remote workstations. Some of the documentation although very rare is contained in hard copy manuals which are stored in the department's archives. We also participate in online chat rooms, community of practice, user groups and online support portals to acquire additional knowledge as and when required.

6. **Who owns the knowledge that you acquire in your present job?**

The knowledge unlike information is very difficult to say exactly who owns it. This mainly because knowledge is tacit by nature and as such it resides in people's heads. Therefore, one would say that the knowledge belongs to the people until it is stored into the company shared folders or repositories where it will belong to the department.

7. **How do members of staff share experiences and knowledge in this organisation?**

Mainly through running applications and accessing information stored in our databases. We have several databases although they are necessarily accessible to all staff members mainly for security reasons – access is password controlled. We also update information regularly on the website to facilitate the access and sharing of information by staff members. Staff members have each a unique email address which they use to communicate among themselves internally and externally with customers. Contrary to the notion that social networks are time-wasters, they could improve project management and the spread of specialized knowledge in the healthcare sector and possibly other large organisations. Employees in the department have a positive attitude to sharing knowledge with one another through using social media tools. However, not all employees were aware of these tools or were willing to use the tools to share knowledge. Our infrastructure has a developed and specialized network to improve the way information is shared via web-based knowledge management systems. For a successful knowledge management in the department, we rely heavily on the process of knowledge sharing. Subsequently,

the electronic communication tools we have cannot be treated as repository within knowledge management but must be regarded as collaborative tools in today's knowledge - driven organisation like ours. To further strengthen the positive effects of knowledge sharing through e-communication tools, the department identified and enhanced those tools that are being successfully used by employees. Our department HQ is connected to all the healthcare entities in Gauteng and today our employees use virtual networks to share and transfer knowledge – some feel more comfortable with some e-mail. The ease of use of this collaboration technology has improved the knowledge sharing culture and integration of text, voice, data, images and video between employees and the divisions in the department where they work. It also created in my view, greater willingness to share information.

8. **How do you transfer your own personal knowledge to others?**

I transfer my personal knowledge discussion among colleagues and asking for help in daily work in addition to meetings. I also use COP's, user groups, discussion groups and "story telling" describing a similar experience whereby a method or technique was developed or used to solve a problem. In this manner, I am able to share my knowledge effectively.

9. **How often do you make use of documented procedures to do your work when you encounter problems?**

I use the electronic documented procedures very frequently to find ways of resolving technical issues. It is also important to use the documented procedures to ensure that I do not violate some systems configurations or security protocols in the system. More often, we encounter the system errors or system 'bugs' which we have never seen before, in which case we always use documented procedures to find solutions.

10. **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**

In our division which IT employees are encouraged to make suggestions or even raise opinions or views on how certain things could be done to improve the efficiency of our technology. In IT, there could be many ways to solve problem or improve a system performance. Thus, we encourage suggestions from staff. However, I cannot say the same about the other divisions which are still government culture orientated – very conservative, protocol driven where different suggestions or viewpoints are not entertained.

11. **How will you describe the way knowledge is transferred between departments?**

Knowledge is mostly communicated or transferred through making information available on the folders in the databases through application systems or through electronic media (emails and intranet). We use COP or User group, training and workshops which our staff do attend from time to time share knowledge and information about different ways of doing

things on the systems. We also use online training or eLearning to acquire knowledge. These also including regular meetings where we brief users on ITC policies and how to effectively use technology for knowledge sharing.

12. **How do you tap into the knowledge of those leaving this organisation or retiring from it?**

This is a challenge in the department because when employees resign we do not get to do any knowledge transfer. We have lost valuable experienced IT resources in the recent past mainly because we do not have a clear retention strategy. When IT professional are employed in the department, they are often so busy that we do not even have time for the forums to tap on the expertise while we still have it. The next thing we know they are gone. For people retiring, we normally contract them back and this possibly the only possible way that we are able to retain the knowledge and use it effectively.

13. **What is your opinion about the role of knowledge in improving performance?**

Knowledge is not an end in itself its advantages include supporting necessary activities within the organisation, such as enhancing OP, improving the capabilities of the organisation's human resources, problem solving, learning, strategic planning and decision making.

14. **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**

I do not think that we have that kind of facility within the department where staff could have informal interaction and collaborate on different and diverse knowledge.

15. **Have you experienced a situation where a staff member has been reluctant to share knowledge?**

No, our staff or certainly the staff in my division do spend a lot of time in teams and working together to resolve complex and technical issues. In the process, they share a lot of knowledge and know-how particularly to junior staff members. No, in my department we pride ourselves of demonstrating how much we know or how much knowledge we have in resolving a problem quicker. I have never come across any of our staff member being reluctant to sharing information.

16. **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**

Our biggest barrier is the lack of modern and advanced technologies. Because of the way information confidentiality concept is applied within the department and perhaps generally in government, information is often not stored as it should to provide easy and quick access. The other challenge really is our storage capacity.

17. **How often do you share information with other business units in the department in formal ways?**

Always, as all employees have access, with the right security levels, to information on the databases. This is precisely my role within the department to provide IT solutions that ensure that all healthcare policies, regulations and operational documents are available to all staff. Therefore, we also hold regular roadshow to the regional healthcare entities to share knowledge about new technologies, provide end-user training as well as updating information on our intranet. In this way, information is shared to all employees in the department.

18 **What are the challenges in sharing information with people from other departments or divisions?**

There are no challenges except that employees must have a desktop or laptop, the right security access and be able to utilise the right applications.

Time of interview: Date: **29/08/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee C)**
Interviewee's years of working experience: **10 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

Investigating knowledge management practices in the **Gauteng Department of Health**

No Question and response

1. **Can you tell me what your job is all about?**

My role as the HoD is to oversee the overall efficient operation of the department in delivering on its mandate. I am responsible for among other The strategic and operational management of the Gauteng department of health, Planning and managing the medical and research programmes of the Department, promoting academic excellence in healthcare and research; recruiting and managing staff of the department and promoting their continuous development; managing the department's budget and raising funds for departmental activities; aligning the vision and programme of the department with the broader vision of the national department of health; providing and/or facilitating mentorship of executive in the department; and offering leadership in transformation initiatives. At operational level, I am also responsible to support, monitor and evaluate district (local) level services, to provide certain specialist provincial level services, to co-ordinate health services within the healthcare regions in the province, formulate norms and standards for district health services and formulate protocols and strategies for health programmes. Yes,

the portfolio is fairly broad but I have 10 executive mangers reporting to me assisting with all these functions.

2. **What type of knowledge would you say you have about this organisation?**

I am qualified medical professional. I held various senior positions in the public and private sector until I was the Deputy Director General: Clinical Services in the Gauteng department of health. I was the acting Head of Department from October 2014. I have qualified with BSC Honours in biochemistry MBCHB and a Management Advancement Programme. I have a vast knowledge of the south African healthcare system and specific knowledge about the Gauteng department particularly the challenges facing this department. Most the knowledge I have is around the healthcare services and the management activities required for the execution of the department strategy in providing healthcare services to the people of Gauteng.

3. **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**

Most of the knowledge that we share among ourselves as colleagues managing the department as a collective is around the implementation of the healthcare policies and regulations, the departmental strategy and operational plans. It is important that all executive managers and indeed including all employees in the department to know and understand the objectives and its deliverables. Most of the staff and experts in their various fields and I believe that they will share a lot of knowledge between themselves whereas from me, the type of knowledge they will need is more on leadership and support.

4. **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**

Most of my skills and knowledge I have acquired through my academic studies at the universities and working experience from my previous in the private and public sector. I also had the privilege of working as an acting head of department which gave me even more insight into the operations of the department.

5. **Where is most of the knowledge that you need to do your work located or stored?**

Most of the information is available in different formats. Some is found in the department archives in the library, some is stored in the department's databases and accessible through our intranet services. Indeed, some of the knowledge is more the experience and expertise from our managerial and professional staff. There are various support documentation and manual that the staff use train themselves and acquire more knowledge and information to resolve the technical and functional issues in their day to day execution of their duties. We also have a lot of documents on healthcare policies, regulations and guidelines available in both electronic and hard copies that the staff consult from time to time.

6. **Who owns the knowledge that you acquire in your present job?**

The knowledge is owned by the staff in general which they have acquired from the information owned or made available by the department. You see, knowledge and experience is something within the staff in terms of what they know - is therefore tacit by nature and as such it resides in people's heads. However, stored information will most probably be the property of the department.

7. **How do members of staff share experiences and knowledge in this organisation?**

I would say that they share their knowledge and experiences through working together in teams. We have also these days, modern information management technologies including the electronic media that the employees use to share their knowledge. We hold at various regions and hospital meetings, seminars and workshops to share information with staff. Also, we have various training programs, mentoring and coaching programs to assist employees' particularly junior employees to acquire knowledge and experience.

8. **How do you transfer your own personal knowledge to others?**

I hold monthly EXCO meetings with my executive managers where we discuss and share knowledge about our experiences and formal report back on general progress and challenges in the department. This is one form of transferring my personal knowledge. I also hold one-on-one meetings with each executive manager where we discussion not only operational issues but also general departmental strategies and objectives and how we believe we could improve on these. In this way, I'm able to share my knowledge but also learn in the process.

9. **How often do you make use of documented procedures to do your work when you encounter problems?**

I use documented procedure from time to time. You see, these are very important as they contain information to guide us in doing our work properly. Documented procedures are the guidelines towards achieving efficient delivery of healthcare services and running the department efficiently.

10. **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**

I would say that the organisation is open to suggestions from staff. You see, when implementing policies, regulations and strategies, various employees will have different views on how these should be implemented. Therefore, we always encourage such views because they are the ones that can help us improve efficiencies. However, there are still some challenges in this area as we still have a fairly conservative way of doing things and relating to one another.

11. **How will you describe the way knowledge is transferred between departments?**

It's mostly communicated or transferred through making information available through our information management technologies. We also have, as I have mentioned earlier, user groups, communities of practice in various professional disciplines, meetings and training and workshops which our staff do attend from time to time. There are other various means in which knowledge is share among employees through collaboration and teamwork. In this way knowledge is shared and transferred between departments.

12. **How do you tap into the knowledge of those leaving this organisation or retiring from it?**

This is a huge challenge except through the knowledge transfer or sharing mechanisms I have mentioned in my response to your previous questions. Some of these mechanisms are not formalized and as such we lose the opportunity to tap on the knowledge of the high skilled and experience staff members who leave the department for various reasons. We have lost valuable healthcare professionals in the recent past mainly because we do not have a clear knowledge retention strategy.

13. **What is your opinion about the role of knowledge in improving performance?**

Knowledge and experience in my view are they key components of ensuring improvement in OP. You see, we can have all these healthcare policies, regulations and guidelines as well as operational plans; they will need experienced and trained employees to implement them. Therefore, the knowledge and experience of our staff is very valuable in ensuring the improvement in the performance of this department and ultimately ensuring the improvement if healthcare service delivery. The knowledgeable and experienced staff in the other supporting department like finance department, human resources management, logistics, etc. is equally critical in enhancing our OP, problem solving, learning, strategic planning and decision making.

14. **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**

We do not we have those facilities as yet (sporting activities, canteen, etc.) within the department where staff could have informal interaction and collaboration – except the formal and tightly planned team buildings sessions. No, we don't.

15. **Have you experienced a situation where a staff member has been reluctant to share knowledge?**

No. Due to the nature of their work, the staff does spend a lot of time in teams and working together to resolve complex and technical issues. In the process, they share a lot of knowledge. I have never come across any of our staff member being reluctant to sharing information.

16. **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**

Our biggest barrier is the lack advanced technology which can make information much more accessible that the way it is at the moment. Most of the information, although available, is not necessarily accessible. We are not investing enough because of our tight budget, in our ICT infrastructure and capabilities to support our complex and ever growing information needs. We also do not have the means or strategies to manage this information effectively.

17. **How often do you share information with other business units in the department in formal ways?**

Always and this is a continuous process.

18 **What are the challenges in sharing information with people from other departments or divisions?**

None whatsoever except the speed and bureaucracy that could slow down or delay the sharing of information across departments.

Time of interview: Date: **29/08/ 2014**
Place: **Gauteng Department of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee V)**
Interviewee's years of working experience: **10 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

Investigating knowledge management practices in the **Gauteng Department of Health**

No Question and response

1. **Can you tell me what your job is all about?**

My job is all about the management of high profile projects identified in the department's strategic operational plan to address urgent or strategic assignments or special projects that require cross-functional engagement with key staff across the department and with external stakeholders, as appropriate. These could be the scoping and implementing special projects and strategic initiatives, including the development and implementation of the strategic plan and long-range strategic initiatives, as determined by the department and HoD and assist in the development of the department's annual work plan and budget, developing funding proposals for departmental projects and initiatives including for fundraising purposes.

2. **What type of knowledge would you say you have about this organisation?**

The department is one of those government departments directly caught up in the huge public sector transformation activities. Key to this transformation is the department's 10-points transformational plan namely the reorganisation of support services, legislative reform, improving quality of care, revitalization of hospital services, speeding up delivery of an essential package of services through the district health system, decreasing morbidity and mortality rates through strategic interventions, improving resource mobilization and the management of resources without neglecting the attainment of equity in resource allocation, improving health human resource development and management, improving communication and consultation within the health system and between the health system and communities we serve and strengthening co-operation with our partners internationally. These strategic projects call for so much information and knowledge of the public healthcare system.

3 **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**

In helping colleagues to satisfy their knowledge needs I often work in conjunction with senior management, HoD and the MEC to pursue and achieve tactical or strategic objectives pertaining to the long strategic vision assisting in the execution of work necessary to meet short term objectives. Often the knowledge required by colleagues is specialised and detailed - this may include undertaking research, tracking trends, preparing presentations; drafting briefing papers and/or compiling pertinent background materials for the subject in question; preparing summaries of discussion; and ensuring appropriate and effective communications with all stakeholders. I also do the research and analysis of issues that have the potential to impact the healthcare sector and provide thought leadership.

4 **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**

The skills and expertise I have, I have acquired over 10 years in project management and job-related experience. A gained a lot of experience in thinking conceptually and mastering complex subject matter quickly through working on complex projects within the depart. I did a lot of training on situational analysis, supply chain management and project management. This training provided me with valuable knowledge and expertise to develop and implement practical strategies, operational plans and solutions to identified issues and problems.

5 **Where is most of the knowledge that you need to do your work located or stored?**

We gather and collect a lot of information from many and different sources depending on the project that we are working on. These sources are largely databases from the research houses, academic institutions, private and public publication organisation or institutes and many other specialised institutions.

6 **Who owns the knowledge that you acquire in your present job?**

This information is owned by the department. However, there is some information which the department publishes on its website or distribute it to the public and this, I would say, the department cannot claim sole ownership to it. On the other hand, the knowledge to putting that information together to address or provide meaning and understanding to issues will probably belong to the staff or individuals who were responsible for that project.

7 **How do members of staff share experiences and knowledge in this organisation?**

Members of staff mostly share their expertise through working in teams and participating in various departmental projects. In the process of doing their work they do share a lot of information, help one another depending on the knowledge and experience of some members of the team. Most senior managers will be more experienced and will often share their knowledge and expertise in meeting or workshops and through mentoring and coaching less experienced staff.

8. **How do you transfer your own personal knowledge to others?**

I transfer my personal knowledge mainly through conducting seminars and workshops, working with user groups and project teams. I also do some publications of articles based on the findings of the research that I do from time to time.

9. **How often do you make use of documented procedures to do your work when you encounter problems?**

I do not often use documented procedure in conducting my work except when putting the project plan together – which will require a standardized methodology.

10. **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**

The department from where I stand is fairly rigid in terms of considering suggestions from staff. This in my view is largely because we are legislation driven organisation and most of what we do is to implement and execute on these legislations. As such, there is very little room to suggest anything different.

11. **How will you describe the way knowledge is transferred between departments?**

The existing processes and mechanisms to transfer knowledge are not really defined and very difficult to identify except the usual communication processes like emails, staff meeting, documents stored in the website, etc. This is because the department does not have a culture of knowledge sharing and transfer. The culture in our environment is a typical conservative culture where the perception still exists that only the senior managers have the need to know, information classification and confidentiality. These are some of the issues that make it very difficult for staff to share information.

12. **How do you tap into the knowledge of those leaving this organisation or retiring from it?**

We don't hence we lose quite a lot of experienced and knowledgeable employees when they retire. As a department, we are often focused only on the work to be done and pay little attention in building the knowledge required to get that work done.

13. **What is your opinion about the role of knowledge in improving performance?**

Knowledge is the most important contributor to providing solution to get the work done. Getting the work done timeously, effectively and efficiently will without a doubt lead to improved OP.

14. **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**

No.

15. **Have you experienced a situation where a staff member has been reluctant to share knowledge?**

Yes, you do come across that type of situation from time to time. But this is caused by fear of reprimand from senior management and also fear of losing your power of knowledge. Remember that in our type of organisation, the more knowledge you have or the more you know the more important you are perceived to be.

16. **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**

The biggest barrier is the inappropriate and inadequate facilities for storing information. We are still largely trapped in using manual ways of storing information using filing systems of hard copy documents with limited and tightly controlled access. We are lacking in embracing the modern document management solutions and information management technologies. Our current electronic facilities are not as sophisticated to provide efficient information storage and access.

17. **How often do you share information with other business units in the department in formal ways?**

A lot through documents that I distribute using the emails and publishing on the department website. Also, as I have mentioned earlier, through workshops, seminars and user groups.

18 **What are the challenges in sharing information with people from other departments or divisions?**

The organisational culture is the biggest challenge. Our organisation is a typical government organisation where there is very little flow of information and knowledge.

Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My job is all about inventory management, distribution management, channel management, payment management, financial management and supplier management. Effectively my job is all about managing the processes used in supply of products and services, from procurement of these products up to delivery to the end users in Gauteng department of health, provincial hospitals and regional healthcare centres. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>I have all the knowledge required to manage the supply chain processes of this department. This is the knowledge defining business boundaries and relationships - decisions on outsourcing. This refers to the roles played by supplier and the department in each other's business decision and operational activities. Also, the key knowledge I have is regarding logistics. This refers to all the processes involved in storing, moving, transporting procure products. I have also knowledge on managing demand and supply, purchasing, selling system interface, manufacturing system interface, product and services design interface. |
| 3 | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>The procurement process in the department is governed by the government's supply chain management guide for accounting officers / authorities to fulfil the terms of the Public Finance Management Act, 1999 (Act 1 of 1999 as amended by Act 29 of 1999) (PFMA), as well as the Preferential Procurement Policy Framework Act, Act 5 of 2000 (PPPFA). The help needed by colleagues is largely on compliance with the procurement policy on the basic demand for the products or service. For example, current departmental needs are understood; requirements for products and services are linked to the budget; products and services specifications are determined; and that the need forms part of the strategic plan of the department. |
| 4 | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>As a healthcare practitioner, specialising as a Pharmacist, I acquired most of my skills from my previous involvement in various pharmacists' roles including as a pharmacist at the north-west department of health and also as a senior manager and head of pharmaceutical services in the Gauteng department of health. In the past six months, the |

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| | key skills acquired was more about streamlining the inventory management, processes and tendering on the overall pharmaceutical supply chain performance. Of course, there was a lot of training on the whole concept of supply chain management which helped improve my expertise in this filed. |
| 5 | **Where is most of the knowledge that you need to do your work located or stored?**<br>We have internal information management and logistics systems that we use regularly for the management of inventory and delivery of pharmaceutical products to provincial hospital. This is where a lot of information is stored and processed. We also have access to other stakeholders (manufacturers and suppliers) websites where we access and retrieve some information we use to do our work. |
| 6 | **Who owns the knowledge that you acquire in your present job?**<br>The department really owns the information. Most information because it is stored on the systems database, it is only accessible to certain individuals depending on your level of authority. |
| 7 | **How do members of staff share experiences and knowledge in this organisation?**<br>Most of my staff in the department rarely shares experience and knowledge because most of the processes are automated and workflow driven except where there is a process problem which will largely be resolved by a senior manager. Apart from that we have an extensive use of email to communicate among staff and external suppliers and provincial hospitals. But, ja! there is little sharing here. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>As an individual, I do have my management meetings and general staff meetings where I discuss departmental plan and strategy with managers and give feedback to staff about the department's operational issues. At a personal level, I do mentor and coach some of my senior managers and share my work experience and knowledge with them. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>We do have documented procedures and guidelines but we seldom use them unless if we are confronted with a unique and rare situation or problem. Most of our processes although documented, they are automated in the system as well. Our processes are such that there is very little human intervention and less paperwork. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>Fairly open. We do receive suggestions from our staff from time to time which we discuss as a management team. The suggestions are mainly on how we could do things differently to improve the way we do things. The suggestions range from process improvement to human resources issues. Staff is free to air their views and opinions because this is natural. |

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| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Most of the knowledge is shared and transferred through (emails and intranet). Very little use is made of paper-based memos or notice boards. The most important forums I would say are the meetings and workshops which are very interactive. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>That is a bit of a difficult one. We do not actually. The reason for that is that we do not have formalised human resources practices like mentoring, coaching and community of practices or user groups in the department. I believe that these are the forums where we could tap into the knowledge of the more experienced and knowledgeable staff even before they leave. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge is key in terms of improving not only individual's performance but the OP as well. That is precisely the reason why we insist on regular training and development. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>I am not sure about that. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>No, not at all. What I have noticed is that the staff is forever willing to discuss and resolve complex issues as a team. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>The biggest barrier is the expensive ICT costs of storage and disaster and recovery costs as well and network costs and maintenance. Generally, the cost of ICT is very high. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>We share information very often through our regular meetings and we generate a lot of importation through emails. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>Sharing information with people from other departments does not happen as often as it should to be honest. Firstly, because we have very little in common operationally except that we adhere to the same healthcare policies and regulations and that we have to part of the collective in terms of healthcare service delivery. Perhaps the other areas that we also share operational information are Finance and HR. |

Time of interview: Date: **16/09/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee W)**
Interviewee's years of working experience: **28 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br><br>As the Acting Chief Director: HRD, EWP and Public Health in the Gauteng Department I am responsible to ensure that I drive the strategic human resources management, employee wellness and public health goals and objectives of the department ins providing quality medical services to the public and in line with the provincial strategy. This is done in order to give a sense of assurance to the employees, public and patients relatives that our health personnel are dedicated to serve as per the Batho-Pele principle. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br><br>The strategic objectives that the department need to render in order to ensure that the public have access to 24-hour medical service. I have gained the knowledge related to budget planning of the department to ensure that financial resources are adequately allocated to various units. I also the vast knowledge about the staff competency of the departments with an understanding of using the resources to continuously train newly recruited employees without disruptions to service delivery for the benefit of the community. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br><br>The typical knowledge needs are strategy settings and implementation in order to ensure effective and efficient service delivery in addition to balancing the allocated budget to the available resources to be able to deliver on the services. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br><br>The knowledge has been acquired through further studying and development of the health care services coupled with interaction with staff department to have a better understanding of the systems. The workshops undertaken have also contributed into my expertise as |

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| | discussions and training interventions are of the currently implemented systems that have been implemented by other departments across the country. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>The information is located within the ICT infrastructure for the purpose of ensuring that the information is accessible to all. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>The knowledge is owned by the institution based on the fact that some of the information has been gained through exposure to using the organisation resources coupled with my own knowledge gathered prior to joining the institution. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>The organisation is a unionized organisation whether capacity building and awareness is part and parcel of ensuring that the union buy-in into the process and capacitate the leadership in order to ensure that they motivate and encourage their members to have knowledge about the organisation. Staff meeting also contributes towards sharing of experience and knowledge. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I engaged and ensure that I initiates projects that staff are given to run in so doing as the projects are reviewed then that creates an opportunity to engage and share information and this happens on a quarterly basis. Again, monthly meetings provide a platform to share information among staff members through review of the challenges and experiences the came through. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>Documented procedure is the core of the business as they provided a means of reference point for all staff members. Every time a process is started a review and reference to procedures is made to ensure that the quality of service produced is excellent and in line with documented processes. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>The organisation is running an open-door policy where every staff member from the floor to management is allowed to make suggestion and opinions. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Knowledge is shares through email communication, organisation reports, organisation magazines, staff meetings and awareness programmes. |

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| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br><br>The department has established workshops where those retiring are invited into the organisation to capacitate staff and for those leaving they are required and asked to provide a detailed summary of critical knowledge that they have acquired and will be of value to staff. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br><br>Successful and improved performance of the organisation provides a basis for motivating and rewarding staff in relation to applying their knowledge and skills to achieve strategic goals of the organisation and once employees are knowledgeable they tend to take more responsibilities and enhancing performance. Therefore, there is a direct positive relation between the two. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br><br>The organisation has set aside budget related to staff team building sessions and entertainment for interacting informally outside the office environment. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br><br>No. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br><br>For me it's the question of whether information made available will be in fact used for the purpose it is intended to offer as some of the information is building on the current skills that the organisation has. Improvements and continuous developments of knowledge management systems in the organisation is critical. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br><br>Information sharing and dissemination within the organisation is done through monthly meeting with unit managers. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br><br>The sharing of knowledge within an organisation constitutes a challenge in that some employees within other departments tend to resist sharing information with the rest of the organisation that in itself creating a barrier. |

Time of interview: Date: **29/09/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee E)**
Interviewee's years of working experience: **20 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br><br>My role to oversee the provision of the clinical health service namely single diagnostic, therapeutic, rehabilitative, preventive or palliative procedure or a series of such procedures that may be separately identified for billing and accounting purposes. In my role, I look after the clinical health service programs like traditional preventive health services such as immunizations, maternal-child health care and communicable disease control; specific assistance programs such as WIC and supplemental food program. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br><br>There is a lot on knowledge I know about this organisation but mainly relating to my area of responsibility. All clinical services should deliberate on the essential considerations of Knowledge about Culturally safe service provision, service networks, outreach services, Multidisciplinary teams, Research, teaching and education, Planned and emergency care, Occupational health and safety, Children's services and Rural and remote services. What we also have in the department is that knowledge used by all clinicians is primarily related to the treatment and support of the patients. This require knowledge of the patient's underlying disease process; an understanding of potential clinical sequalae; and specific monitoring and interventions required. Within the department, there are key areas of knowledge that were familiar to and used by both doctors and nurses as they work to support patients. There are areas where knowledge is still lacking and not readily available and that creates a challenge in one way or the other. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br><br>The information needs depend on the clinical requirement. Doctors and nurses used some shared and some distinct types of knowledge to inform patient and service management decisions. This knowledge or information is data excerpts and field data papers. Biomedical information (anatomical, physiological and biochemical) is also knowledge needed and mostly frequently used by the doctors and nurses used to underpin the understanding of therapies used certain illnesses. Most of the information requested from |

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| | colleagues in other divisions of the department or other healthcare facilities and hospital is mainly to share and compare notes and to verify the guidelines on policy interpretation and application. The colleagues indeed also request information on policy and regulations updates as these do occur very frequently during the year. Also, the healthcare policy and regulation changes taking place in our country's healthcare systems and the efforts to improve quality mean that colleagues and many health professionals must acquire new knowledge and information. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br><br>I am a qualified medical doctor and have practiced in medicine for several years. I'm also a trained practitioner and this is where I got my knowledge and experience. I have worked in the department for several years now and that is where I have acquired my managerial skills. There is a lot of training in the department that we also attend as well as workshops, seminars, conferences, user groups and many meetings where we get to acquire a lot of information and knowledge. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br><br>Most of the information is stored in the regional healthcare centres, clinic and hospitals. This is where most of the challenge is because this information is stored in hardcopy files – often misplaced or go missing. The knowledge and experience itself is simply in people's heads. Knowledge reside mostly in the most experienced senior employees and senior medical professionals. Very little information to do our work is stored electronically where it can be easily accessed. However, the old and new healthcare legislation is stored in files and databases in the computer system from where we can access them from time to time. All departments and employees have access to an extensive pool of knowledge - whether this is their understanding healthcare policies or patients' needs and the department's operational plans, strategies and objectives or healthcare system and departmental business. The way the department gathers, shares and exploits this knowledge is central to our ability to develop successfully. The management of this knowledge and information can benefit everyone in the department. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br><br>The knowledge, as I said in response to your previous question reside in peoples' heads. Therefore, they own it. There is nothing that you can do to disown them of that knowledge unless if you put the mechanisms in place to allow for the sharing and transfer of that knowledge. The department will just own the physical information in the files and systems databases – that's it. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?** |

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| | The staff at the various healthcare centres shares their knowledge in the workplace while doing their job. There are in certain healthcare centres debriefing sessions for doctors and for nurses and in some instances combined. These are other ways that knowledge is shared. We have seen an increase in the use of electronic media like e-mail, SMS and WhatsApp. These forms of communications are becoming even more helpful where nurses and/or doctors are in a situation where there is little talking (i.e. theatre). On the general and administrative type issues, the department communicate through the intranet, electronic memos, emails, etc. to share topical issues with the entire staff. There are also in various departments and divisions meetings, mentoring programmes, training and workshops to facilitate knowledge sharing. |
| 8. | **How do you transfer your own personal knowledge to others?**<br><br>Mentoring and coaching. I use also SMS and email to communicate a lot to staff. This sharing of knowledge is fairly informal but it's also more robust. This is what many of us already do, with social media. I also use discussions and work group to share and discuss similar experiences whereby a new or different technique was developed or used to solve a complex problem. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br><br>Very often. All the clinical procedures are documented. This is very critical to ensure that we follow processes to the letter without deviation. Making use of the documented procedures is important to transfer knowledge and skills to new employees so that they can gather the experience as quickly as possible. Therefore, it is critically important to always refer to the documented procedures on how to implement healthcare practices. When it comes to the government legislation and regulations, these are fairly accessible and available on the department's intranet although we also keep hard copies in the healthcare facilities. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br><br>That's a tricky question. That depends on which division of the department. At the regional healthcare entities including the staff who work there, the environment is such that suggestions, ideas and indeed knowledge sharing comes naturally. The culture is such that staff will be able to efficiently and successfully carry out their work through constant sharing of suggestions and their knowledge. The situation will be different at HQ where everything is just rigid and bureaucratic. At the department level I wouldn't say that there is any such culture that encourages staff to come up with suggestions or new ideas. |
| 11. | **How will you describe the way knowledge is transferred between departments?** |

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| | Between departments I would say that there is very little knowledge transfer taking place except transactional information. Perhaps, knowledge one could say is shared at leadership level when we do operational reporting or discuss high level policy issues. There are inter and intra-departmental meetings on regular basis. However, it is difficult to classify this as knowledge sharing as very little interaction and teamwork takes place for employees to share what they have learned among themselves to resolve problems. There is simply no culture of knowledge sharing knowledge or transferring knowledge. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br><br>Not at all. Look at the number of health professional that we have lost and none of that knowledge and experience we lost to the private sector or abroad. We simply do not have programs to manage the knowledge or intellectual capital that we have within the organisation. Our HR programs like mentoring, coaching etc. to facilitate the transfer and sharing of knowledge are largely informal. This is the same situation at the department level where we have lost very good and experience administrators and competent managers. This is a disaster; we need to put in place a knowledge management program that will assist the department to help retain the knowledge. This disaster is what contributes to the drop in good healthcare service and the loss of healthcare professional professionals is not helping us either. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br><br>As the old adage, says “Knowledge is power”. Although it may seem like anyone can be an expert on many things in this internet these days with a quick Web search, knowledge is still a key advantage for organisations and for businesses. There is a big difference between knowledge and information. Some forms of intellectual capital are transferable, internal knowledge in peoples’ heads is not easily copied. This means that the knowledge anchored in employees’ minds can get lost if they decide to leave the organisation. Therefore, management of knowledge in the department has a positive impact on OP. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br><br>I do not think that we do. Although the staff can easily relate in social environments which unfortunately we do not have within the department. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br><br>No, our staff particularly at the regional healthcare centres interacts freely and share information and knowledge. I have never experience a situation where at staff member deliberately refuse to share knowledge. |

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| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br><br>Our biggest barrier is the facility, call it ICT facility where information could be stored in a centralised environment where it can be easily accessible anytime. We have poor tools and technology that does not support storage of information. That is the reason why people store the information on their desktops, laptops and external memory gadgets. Generally, within the department, because of the over exaggerated issue of information security and confidentiality, information is often locked in cabinets and offices. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br><br>We do that all the time. We hold regular workshops, debriefing session, EXCO as well as training and updating information on our intranet. In this way, information is shared to all employees in the department. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br><br>Challenges as I have alluded to in my earlier responses is poor ICT infrastructure, organisational culture which does not encourage let alone reward knowledge sharing or knowledge transfer, hierarchical OS driven by adherence to protocol and conservatism – ja! this is simply government culture. |

Time of interview: Date: **29/09/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee X)**
Interviewee's years of working experience: **20 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br><br>The role of my department is to assist the healthcare centres and hospitals with the resources, policies and guidelines on determining the cause of death by examining corpses. We evaluate and provide services of the forensic pathologist across the region. Our role is also to performs autopsies/post-mortem examinations and provide autopsy reports containing our findings and opinion about the pathologic process, injury, or disease that directly results in or initiates a series of events that lead to a person's death; the |

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| | "manner of death" or the circumstances surrounding the cause of death, which in most jurisdictions include Homicide, accidental, natural or suicide. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br><br>I have extensive knowledge of forensic medicine that deals with the application of medical knowledge to aid in the administration of justice and by the legal authorities for the solutions or legal problems. This department has an extensive record of excellent service and reliable information that has been used to solve very complex criminal cases. I have personally participated in some of these. The department have procedures and guidelines on how to study the medical history of the dead, evaluate the crime scene evidence including witness statements, perform an autopsy to uncover evidence of injury or disease, collect medical and trace evidence from the body for further analysis. The department does also have access to specialised knowledge on issues such as toxicology, firearms/ballistics, trace evidence, serology (blood analysis) and DNA technology which are used from time to time to draw a final autopsy report. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br><br>The knowledge needs of colleagues with depend on which part of the department they come from. At management level or department administrative services, the knowledge need if more out of general knowledge and inquisitiveness. For example, colleagues would ask questions like forensic pathologists deals only with crime? How long does an autopsy last? What makes a good pathologist? etc. However, from the medical professional side, the colleagues' knowledge needs would be how to strive to achieve respect, understanding and credibility in court. They must give the appearance, the aura of being independent, non-partisan scientists. This is the knowledge that the pathologists need in order to appear and project an image of neutrality, impartiality and objectivity. Some of the knowledge needs from medical professionals is about the presentation of medical evidence and photographic evidence both which related to all statements which the court permits or requires to be made before it and general relations of the scene of the body to its surroundings respectively. Very complex and varied knowledge requirements from colleagues. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br><br>I have acquired my skills and knowledge through studies, training and practice. I have amazed my knowledge through experience, common sense and scientific interpretation. Teaching and discussions is another method I used to get better understanding of the subject. "The secret of the disease of crime is always hidden in the silent soul – the dead body". I have attended many seminars and conferences on the subject in order to acquire |

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| | knowledge of the subject. In the last six months, I have done just a few conferences which were very good but it was just to enhance what I already know. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br><br>Most of the information is documented in various medical journals all over the world. The information is also accessible in most medical websites. In our department, we still have a challenge at regional healthcare centres and hospitals in that we still do not have electronic records management or suitable and shared electronic media where we store medical information. Most of the information is still stored in paper format and is mostly inaccessible by those who need it. It is unfortunate that the huge amount of knowledge and experience is with the employees who have no formal mechanisms to share, transfer or even store it. We have facilities in the department like the intranet etc. However, this is the general type of knowledge like the old and new healthcare legislation, stored in files and databases in the system. However, we cannot store medical information in the same databases. All departments and employees have access to an extensive pool of knowledge - whether this is their understanding healthcare policies or patients' needs and the department's operational plans, strategies and objectives or healthcare system and departmental business. The way the department gathers, shares and exploits this knowledge is central to our ability to develop successfully. The management of this knowledge and information can benefit everyone in the department. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br><br>The knowledge will evidently be owned by the people, because it is largely an experience, the know-how and it is in their heads. Indeed, the department will have proprietary right to the information in its archives and electronic databases but not in people's heads. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br><br>Members of staff I really believe that they share information in the best way they can. There is an extensive use of the email system and the intranet. Business units throughout the departments and at the regional healthcare centres and hospital do have regular meetings training and workshops taking place from time to time. |
| 8. | **How do you transfer your own personal knowledge to others?**<br><br>As an individual I transfer my knowledge mainly through teaching and training. We do have at the hospitals and regional healthcare centres, debriefing sessions which I attend and share my knowledge in participative discussions. Sharing knowledge is very key in enhancing the knowledge of what we need to know to do our work effectively and efficiently. |

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| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br><br>Very often. The documented procedures are the bible that guides all of us to ensure that we do our work in a defined and uniform way. Also, all the government legislation and regulations are published and saved on hardcopy form to serve as documented procedures and guidelines. Documented procedures provide information about the guidelines on how each business unit or professional services conduct their business within the healthcare legislation and guidelines. Therefore, it is critically important to always refer to the documented procedures on how to implement healthcare practices. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br><br>This I can respond to that in two ways. At professional level, we do have that culture of working as teams and always coming with new suggestions, sharing information and knowledge. However, the same cannot be said about the culture in the general department's administrative business units. The department has a typical public sector organisation culture. Employees do not often make any suggestion not that the do not want to but the departments culture does not allow it. There is practically very little encouragement to employees to voice their opinion. Let me stop there before I go into unpleasant further details. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br><br>It's pathetic. There is no knowledge transferred between departments. We are still operating in silos. We have defined political and operational territories. Our ICT infrastructure is not helping either except through providing electronic channel like (emails and intranet). This is not even important as I can have an email facility for free anywhere outside. I'm referring to our own internal and shared information databases which are accessible to all employees – they do not exist. The department alluded to shared knowledge repositories and knowledge management programs in the strategic plans – but this is still a pipe dream. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br><br>None whatsoever. The loss of healthcare professional professionals which has been so much reported about in the media is real. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br><br>There is no question about the important role that knowledge and knowledge management plays in the high performance of any organisation. Over the years, knowledge management has progressed from an emergent concept to an increasingly common function in business organisation. Knowledge has undoubtedly demonstrated its ability to |

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| | support an organisation's competitive strategies. We are in economic era and digitization has redefined how we do our work. The floodgates of information have been opened wide. The key is taking that knowledge and create knowledge into our department in order to improve our department performance in delivery quality healthcare services. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br><br>No. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br><br>No, except in a different format among healthcare professional because of the nature of their work. There is simply no trust between management and employees. There are incidents where employees were seriously reprimanded for sharing information and knowledge. Instead of rewarding them for sharing of knowledge among other employees we are instead punishing them. There is simply no culture of knowledge sharing in the department — very sad indeed. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br><br>For me there are only two, organisational culture and poor Information Technology infrastructure |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br><br>Always. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br><br>My view is that challenges in information sharing in our department are influenced by inter-departmental, inter-cultural and inter-disciplinary differences which exist in the departments. It is difficult to build a knowledge sharing culture without understanding what one has set out to build. Leadership within the department needs to embrace the concept of knowledge management. Further, leadership needs to outline and articulate a strong vision and a high-level process for knowledge sharing. This will give knowledge sharing initiatives credibility within the department and empowers the healthcare operations personnel to accomplish the knowledge sharing goals set for them by leadership. |

Time of interview: Date: **02/10/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee F)**
Interviewee's years of working experience: **11 years**

Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br><br>My role in the department is to strategically direct and manage the provision of financial management support services to the Gauteng provincial department of health: Being administratively in charge of the Budget and Treasury Directorate of the department, assisting the accounting officer (HOD) to carry out his or her financial management responsibilities (in line with delegations), in areas ranging from budget preparation to financial reporting and the development and maintenance of internal control policies and procedures, implementing relevant financial reforms at the direction of the accounting officer, with the assistance of appropriately skilled finance staff; and undertaking specific responsibilities as a member of the top management team. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br><br>The type of knowledge I have about the department over and above Healthcare policies is about financial management and how public sector financial management policies are implemented and executed. The knowledge on the Public Finance Management Act (PFMA), Medium Term Expenditure Framework (MTEF), budget allocations, budget planning and implementation, recovering deBTS owed to the province, Tariff policy, inventory management, supply chain management (SCM) and all other financial reforms initiatives required in the department to intensify efforts to foster an organisational culture of fiscal discipline and find innovative ways to improve the patient experience of healthcare services. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br><br>The knowledge typically sought from my department cover a wide range from basic bookkeeping to providing information to assisting managers in making strategic decisions. Most of the information requested from colleagues in other divisions of the department or other healthcare facilities and hospital is more on financial management support and day to day transactional accounting for the business. However, some of the information is available in the financial management policies, procurement policies, budget policies, etc. We assist the colleagues in the department mainly with clarifications and corrections at transitional level when the execute tasks that require or are linked to |

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| | financial transaction. Approvals are also areas where colleagues in the department ask for permission of assistance. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br><br>My knowledge and experience is largely acquired from my academic qualifications, ongoing training and day to day operation in the work environment. As government officials, we are also trained on the government or public sector financial framework, policies and regulations. This is an important knowledge to ensure that we execute the financial transactions in a compliant manner and as expected by the legislation. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br><br>Most of it is stored in procedure manuals stored in the department filing system and some are found in the electronic documentation stored in our systems. To do the work, employees will from time to time work together to in teams to guide and assist one another. Therefore, one would say that the more experience employees will have the knowledge and experience not necessarily covered fully in the procedure manuals. This is how junior staff members get to know and understand how to do their work. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br><br>The department of cause owns the information in the form of the department's financials information, procedure documents, legislations, etc. However, what the department does not own is the knowledge and experience which reside with me - it is my knowledge and my experience that I can use it not only in the department but anywhere else. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br><br>As I have mentioned earlier, the staff normally work in team to resolve issues. This in my view is another way of sharing knowledge among employees. The various practices in the department are also used namely, meetings, workshops, mentoring, etc. We also use our internal website and emails. I must say that some of these knowledge sharing activities are highly dependent upon our environment and the quality of staff relationships and trust. |
| 8. | **How do you transfer your own personal knowledge to others?**<br><br>Through regular workshops and, meetings and seminars with my staff and other senior colleagues in other departments. It is important in my area of responsibility to continuously share the knowledge on financial management procedures and processes because these could be difficult and complex sometimes. I also use one-on-one consultation particularly with senior colleagues to solve problems and make decisions. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?** |

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| | Very often because these changes all the time. Besides, there are so many financial documented procedures such that you are forced to refer to them from time to time. This is important because we are dealing sometimes with issues that do not happen all the time – hence you will need to consult the documented procured mainly to verify one's knowledge. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br><br>The financial policies, regulations and indeed the documented procedures are fairly rigid. As a result, there is very little suggestion during the cause of the year that can be entertained. The only suggestion perhaps is at the operational level where an employee can suggest doing the same thing differently to reach the desired results as long as there are no violations of procedures and policies at all. In the public sector, everything is driven by policies and regulations. As such, employees are not given any opportunity to think outside of a box – they just simply implement and execute the law. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br><br>Knowledge is transferred through making information available on the procedure manuals (hardcopy or electronic). There are lots training and workshops sessions that we conduct regularly to equip the staff with the knowledge and understanding of the financial procedures and processes. There is also a lot of staff interaction and teamwork within the department and across departments where employees share what they have learnt among themselves to resolve problems. There is to a certain extend the culture of knowledge sharing knowledge or transferring knowledge. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br><br>This is a very difficult one. Employees are moved around so often that even when they resign we learn about it when it is too late to can tap on their experience and knowledge. I guess that no one thinks that when employees resign that we are losing anything because they are often replaced with less experienced people. There is no continuity – every time when we receive a new person, we start afresh in terms of training. Internally, we do not have formal mechanisms like community of practice, group forums, etc. where we can acquire and store this knowledge for use by new employees. This situation is also contributing to a drop in good service delivery and poor financial discipline in the department. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br><br>Knowledge is critical in any OP. Knowledge is a key organisational resource. Accountants in general (and management accountants in particular) are implicated in the management of their organisation's knowledge resource because the effective utilisation of that |

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| | knowledge is reflected in ultimate business performance. However, accountants have tended to view knowledge mainly in terms of financial information and a range of non-financial performance measures, or in terms of reporting the 'intellectual capital' of an organisation. In what is increasingly referred to as a 'knowledge-based economy', it is evident that insufficient management attention is given to knowledge as a valuable corporate asset and that OP can be improved by sharing, retaining and utilising the knowledge already held by the department more effectively. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br><br>I am not sure about that and I don't think so. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br><br>No, not quite no. Like I have mentioned earlier, we hold workshops, meetings, teamwork, etc. to share information. Unless on a one-on-one basis that a staff member refuse to share – but I'm not aware of such incidents. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br><br>It is lack of modern technology and rigid organisational policies. This environment is not like the private sector where information is readily available and accessible. There are issues of security and confidentiality which in my view are exaggerated by leadership in order to preserve power and knowledge to themselves. The technology we have is not sophisticated or modern enough to allow interoperability among various applications we have in the department, there is no centralised information database where information can be stored or accessed. The network both WAN and LAN are pathetic to such an extent that it is better to store information on one's computer to allow for ease of access. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br><br>Often although in limited ways as define by the policy on security and confidentiality. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br><br>There challenges are that there is no understanding at leadership level of the importance of collaboration across departments – departments are still operating in silos which in my view, is a leadership problem. It is the conservative and highly hierarchical OS that created the sharing of information. Technologies as well, as I have mentioned earlier, is a serious challenge. |

Time of interview: Date: **02/10/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee Y)**
Interviewee's years of working experience: **25 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br><br>My role in the department as the Chief of Staff in the Office of the MEC is to set priorities and political directives in order to meet the mandate of the department. Other roles including fulfilling reporting requirement in line with the legislative framework and political requirements; regular reporting to the legislature, portfolio committees and EXCO on financial matters; provincial priorities aligned to political imperatives; set priorities and political directives, aligned to the department strategies. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br><br>National and provincial healthcare legislations, provincial healthcare regulation, provincial healthcare policies, provincial departmental operational plans. The type of knowledge I have about this department is also about the departmental strategies and objectives, the medium and long term plans to achieve the desired outcomes as per the healthcare policies. Most of the knowledge that I have about this department are also the political alignment of the department to the national department of health strategies. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br><br>Colleagues will mostly ask me about clarity in terms of political correctness and alignment to the provincial priorities of some of the operational activities they are engaged in. They will also receive from me any official notification regarding the changes to the legislation or new directives or policies. All information about any engagement by the MEC in support of their operational activities is arrange and managed by my department – therefore, all colleagues will ask for timelines for engagement. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br><br>I guess it is more about lots of training on public services administration and protocol and a lot of experience after working in this and similar environments in government for many years. |

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| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br><br>Most of the knowledge is in reading and understanding the legislation, regulations, policies, guidelines that are contained in various documents and files stored in the department archives and libraries. It is also a good idea to interact with your peers in other departments to understand the dynamics on how certain things could be done or improved on. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br><br>The department owns all information and it is kept in files as I have already mentioned. This information is the property of the department and there are security measures, protocols and department policies that govern access, management and use of this information. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br><br>The staff share information through regular use of the intranet, in meetings, through email, etc. I guess that there are many ways that the staff interact socially where they might be discussing issues relating to their work. |
| 8. | **How do you transfer your own personal knowledge to others?**<br><br>I advise and interact with colleagues when communicating programmes and schedules on a regular basis particularly of the MEC's engagements and the preparation expected from them. I also communicate on a regular basis new information coming from the national department, be it policies or regulations. I collate information from my colleagues to compile a report that goes to the portfolio committee, to EXCO and other stakeholders. This information is shared with colleagues from time to time. We communicate this largely through email and written internal memorandums. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br><br>Always – this is the only way you can learn how to do thing properly all the time. Departmental protocol and communication procedures including the government legislation and regulations are published and saved on files in the department's library. We always follow communication procedures and protocols in engaging or communicating all mater of the department either internally or externally. The documented procedures provide information on how to do certain things, therefore, it is important to always refer to the documented procedures on how to execute on your task. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?** |

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| | Very little if not none. The public sector or government environment is a hierarchical structured environment, highly legislated and protocol driven. It is so conservative that it does not allow for free expression of divergent or even new ways of doing things unless if they are legislated from above.<br>Because of the bureaucracy and protocol driven organisation like the government department, there is very little encouragement to voice one's opinion but to execute according to policy without questioning. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Knowledge is mostly communicated or transferred through making information available on the electronic media (emails and intranet). At the person to person level, there is very little interaction in the workplace as there is no culture of knowledge sharing knowledge or transferring knowledge. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>I'm not sure how that is done if it is done at all. Our HR practices perhaps do that when they conduct exit interviews. I do agree though that when people leave, particularly very experienced employees as a result of retirement, they leave with a huge amount of knowledge. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge, like in life, is very important to understand and improve your performance as individual. I'm therefore inclined to agree that knowledge has a role to play in improving OP. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>Not that I know of |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Yes, quite often. Most of the information is controlled by issues of security and protocol. Not all information can be shared. In most cases staff members will be reluctant to share information because that might be self-incriminating. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>There is no barrier as most of the information is stored in the department library and in the departmental archives. |

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| 17. | **How often do you share information with other business units in the department in formal ways?**<br><br>Only when I have to communicate new policies, new directives or give guidance to matters of protocol. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br><br>There isn't any except that sharing information is governed by certain communication protocols. |

Time of interview: Date: **07/10/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee G)**
Interviewee's years of working experience: **18 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br><br>My role in the department is more to ensure that ever changing healthcare regulations which create significant challenges for the department and the regional healthcare facilities and hospitals are understood and properly implemented. In this complex environment managers must make astute, well-informed decisions that can be clearly communicated to all stakeholders. In this regard, my role involves creating value for the department through the application of knowledge, techniques and assets to improve healthcare service deliver. This also involves the enhancement of the management capacity of the department to deliver the optimal level of high quality healthcare through project management, strategic planning, cost management, planning and facility management. We also ensure the successful goals of improving the day to day operations of the department's healthcare facilities and staff regarding diagnostic related grouping, staff skills audits, clinical audits, quality assurance and monitoring and evaluation. We also assist the department to ensure that the department keeps up to date with current trends in the industry through project baseline and impact studies, project reviews, project feasibility studies, epidemiological studies and surveys. |
| 2. | **What type of knowledge would you say you have about this organisation?** |

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| | The department has a lot of scope to cover in the healthcare environment and as such the information and knowledge requirement is wide and varied. The knowledge I have about this department is the broader healthcare regulations and policies, department strategic plans and the annual performance plans. Specific knowledge I have is more on the finance and financial management; human resources management and development; district health services for primary healthcare; hospital management; medico-legal services and litigation; health information management and health information systems; communication and social mobilization; and health infrastructure management and development |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br><br>The knowledge types that colleagues often ask for are the purposes of the monitoring and evaluation mechanisms and the information needs of each of the management and healthcare categories namely, the clearly defined objectives, outputs and indicators; coordinated and common reporting tools; methods for obtaining information on indicators, their responsibilities for information gathering, time frame and frequency of data collection and how to establish mechanisms for sharing information and incorporating results into prevention and response planning. The knowledge needed by colleagues also involves knowledge of the process evaluations, focusing on measuring what the programme has undertaken and its expected outcomes; knowledge on outcome evaluations, involving department strategies to gauge the extent of success in achieving the outcome, identify underlying factors, validate the contributions of divisions and the identification of key lessons learned and recommendations to improve performance; and the knowledge on impact evaluation which focus on assessing changes in the departmental and employees performance and the environmental context that can be attributed to a particular departmental policy or strategy. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br><br>I have acquired the skills through training and experience gathered in my previous job. A lot of it also is acquired through training and development that I undertook in the past and in my current job. Therefore, planning, project management and continuous quality improvement skills and techniques were an integral part of my management training. In the past six months, I have acquired a lot of skills and knowledge on quality assurance in the delivery of healthcare services. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br><br>We use a lot of documented information in manuals often found in the department library. Some of the information is stored in the department computers databases which we also publish and made available to staff through our intranet services. All departments and employees have access to an extensive pool of knowledge - whether this is their |

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| | understanding healthcare policies or patients' needs and the department's operational plans, strategies and objectives or healthcare system and departmental business. This information is also located in various departments stored in files or desktops |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br><br>This is where we have to make distinction between knowledge and information. All the information in my view is owned by the department and it is the property of the department and there are department policies that govern the management and use of the department's information. However, knowledge acquired through doing my job is mine even though it can be shared and transferred to colleagues. Logic informs us that if I were to leave the department tomorrow, I will leave with that knowledge and unfortunately it is not documented anywhere but reside in my head. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br><br>Most of the staff in the department shares the knowledge through various forms of interactions. These could be formal coaching, mentoring, meetings, workshops, seminars, conferences and working as teams in their day to day work activities. The most regularly used method of sharing information is through our internal website and emails. There could just as well be some informal and social learning that takes place through daily social interactions such as participation in group activities, working alongside others, tackling challenging tasks and working with customers and patients. |
| 8. | **How do you transfer your own personal knowledge to others?**<br><br>Sending out regular updates on monitoring and evaluation programmes. I do have one-on-one sessions with my colleagues to look at the interim outcomes of the evaluation processes on their various projects. It is in these sessions that we share a lot of information and knowledge. As an individual I manage information that I receive and, make sense of it and share with others. I also use email to communicate broadly to staff in the department and update all the monitoring and assessment documents on the intranet and shared folders in the computer. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br><br>We do that as our daily routine because we have to often revisit the department's policies, procedures, goals and objectives etc. in order to accurately evaluate and monitor progress. Yes, documented procedures are important to ensure consistency in the manner in which we carry out the monitoring and evaluation. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?** |

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| | I would say that there is some openness in listening to employees' suggestions. As a matter of fact, we have suggestion boxes in various locations in the building. We have even made facilities available on the department's intranet where staff could make suggestions. However, the use of these is very low mainly because the staff do not believe that their suggestions are taken into consideration at any stage. There is also an element of distrust of management that their suggestions could be used against them. This mainly because our department likes any government department is highly politicised and there is very little encouragement to voice one's opinion but just to execute according to policy and make sure that you cover your back. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br><br>Knowledge is mostly communicated through making information available on department website. We also communicate largely through the emails and electronic display monitors. However, there is still a dominance of paper used like letters, memos, monthly reports, minutes, etc. There are inter-departmental meetings and workshops and training to which the staff does attend from time to time including. There is also a lot interaction and teamwork among employees to share knowledge and assist one another to resolve difficult problems. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br><br>I do not think that we do. If we do that, it could be as a result of efforts of individual managers but it is not something that is practiced in the department. We lose a lot of knowledge as result this. If we had some programs in place which formally allow employees to share information, we could minimize the amount of knowledge lost. But we do not have such formal discussion forums or community of practice where knowledge could be transferred. This is a serious loss because older employees leave with a lot of knowledge about administrative, management and healthcare services - when they leave, they leave with their skills and knowledge |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br><br>Knowledge is very important and can be employed in the pursuit of innovation and I believe that is can be used as a process through which the department can generate value from its knowledge assets. It is my view and certainly most of my colleagues' views that similar to any departmental resource, effective management of the department's knowledge through the development of capabilities should contribute to key aspects of the department's performance. Also, if the department could develop greater knowledge management capabilities, we can more effectively develop the healthcare offerings to meet the patients' needs. With greater knowledge management capabilities, the |

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| | department can obtain and use knowledge more effectively and efficiently, which might result in above-normal performance. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br><br>Yes, staff does mix and mingle during their lunch hours. However, I'm not sure if these social interactions involve meaningful exchange in knowledge. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br><br>Yes. This happens often because the business units within the department still operate in silos. There is also this issue of information privacy and confidentiality which is completely misunderstood in my view. There also of lack of trust among employees – everyone want to protect themselves. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br><br>The biggest barrier in that there is not accessible shared folders where the department knowledge and information could be stored. Information is scattered all over in peoples' offices, computers, memory stick, you name it. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br><br>I always do. I send out monthly and quarterly progress reviews on projects and monitoring outcomes to various business units. I communicate regularly through the internet and emails to the entire department on a variety of issue relating to policies, regulations and how they impact the current running projects. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br><br>In government or public sector in general, there will always be challenges particularly in sharing knowledge. This is mainly because the concept of knowledge management is still foreign to most of us. The silo operation is a serious challenge and this is not unique to our department but it is a government issue. The government culture is such that the more information or knowledge you have the more powerful you are. Therefore, people with all this information will not necessarily share using confidentiality and information security as a reason. Current leadership comes from a politicised environment and do not understand the importance of collaboration and sharing knowledge in the modern economy. |

Time of interview: Date: **08/10/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee Z)**

Interviewee's years of working experience: **22 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br><br>My role in the department is the establishment of the regional healthcare centres which includes hospitals, clinics, day-care centre, etc. in accordance with National Health Act, 2003 (Act 61 of 2003) section 2 of the National Health Act, 2003. This involves the district health system that encompasses public and private providers of health services; provides in an equitable manner the population of Gauteng with the best possible health services that available resources can afford; setting out the rights and duties of health care providers, health workers, health establishments and users; and protecting, respecting, promoting and fulfilling the rights of the people of Gauteng to the progressive realization of the constitutional right of access to health care services, including reproductive health care, provide an environment that is not harmful to their health or well-being, provide to children the basic nutrition and basic health care services contemplated in section 28(d) of the Constitution; |
| 2. | **What type of knowledge would you say you have about this organisation?**<br><br>My knowledge about this department is how the regional healthcare centres are established and operate in executing the healthcare services. These include access to healthcare facilities and general management of these facilities to deliver healthcare services to patients. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br><br>Most of the information requested by colleagues is to address challenges related to operational issues. Challenges facing the district healthcare centres in the provision of efficient and effective management of district hospitals in order to satisfy the unlimited needs of its citizens with limited resources; lack of medical consumables and financial and human resources; poor working conditions, lack of financial resources, unavailability of medical equipment, dilapidated buildings and high staff turnover. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br><br>I acquired most of my skills from the previous deployment in various positions within the department and at several hospitals. My knowledge comes with experience of working |

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| | with these entities as well as a lot in-service training in healthcare. Continuous training of the healthcare legislation and frameworks. We do have a lot of workshops and regular meeting with management at these regional healthcare centres which provides me with a lot knowledge, experience and skills to do my job properly |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the information is stored in the national department health data centres or databases including our own computer databases. I have a lot of information in the library and files in my office where I keep the latest information. Most of the healthcare legislation is accessible to an extensive pool of knowledge in the form of healthcare policies. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>The information is stored in the department's archiving and filing facilities. Therefore, I would say that it is owned by the department. I cannot dispute that the experience I have in doing my job is with me because this is what I have acquired over time. There is nevertheless coaching and mentoring facilities to provide new employees with useful and important knowledge to do their present job. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>Like I mentioned, I do mentoring and coaching to new and existing staff members. In this way, I share a lot of knowledge and the know-how to them. Staff members are encouraged to read regularly the healthcare policies and operational plans that are stored electronically and are also published on the intranet. We hold staff meetings and workshops regularly in order to share information with the staff. The electronic memos, emails and the department's website offers regular updates on recent information, be it changes in legislation or operational issues. I can discard the fact indeed there are informal social interactions among staff members or group activities where information might be shared |
| 8. | **How do you transfer your own personal knowledge to others?**<br>Through my one-on-ones with my management team and the staff in my monthly meetings. Like I mentioned earlier, I do a lot of mentoring and coaching to some of my staff members. Sharing knowledge in this way strengthens employees to understand the tricks that are otherwise not documented on paper. I use a lot of emails as well including social media and electronic memos and emails. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>I use the documented procedures very often mainly because we have very dynamic organisation which changes from time to time. The government legislation and regulations are published regularly and are distributed in hardcopies to various regional healthcare centres. Because there are so many operational procedures, it is important to always or |

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| | from time to time refer to these documented procedures to make sure that I do not deviate from standard practices. It also important for the staff in general to always refer to the documented procedures in order to ensure uniformity in execution on healthcare services. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br><br>Our environment is very conservative and bureaucratic. Although we do have employees raising their views and opinions but this very limited and seldom implemented. The government culture is such that we implement and execute what is in the legislation and policy. This does stifle innovation and improvement in doing things more efficiently. The communication itself is more instructional or top-down as opposed to discussion to listen to different views and opinions. The different discussions, views and opinions will probably take place at operational level when the staff is trying to determine how to execute on the policy. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br><br>Mostly through meetings, workshops, seminars, training and electronic media (emails and intranet). Departments' heads do have monthly EXCO where ongoing operational issues are discussed and problems resolved. In this manner, knowledge is shared and we learn about what other departments are doing. However, this transfer of knowledge is limited to senior employees who attend the EXCO. Very few of the EXCO members discuss or report back these types of discussions with their staff. This in itself becomes a blockage to the transfer of knowledge and information to the rest of the staff. Therefore, one would say that there is no culture of knowledge sharing knowledge or transferring knowledge in our department to empower employees. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br><br>We do not have mechanisms to do that. This is the reason we lose valuable skills and knowledge as a result of very experienced people leaving. We do the security checks to make sure that employees do not leave with the organisational files and this is probably the only way we retain information – but the knowledge is gone. We do from time to time conduct exit interviews or handover processes but this is more of a procedure rather than tapping on knowledge of departing employees. This situation is very critical because we end up with new employees with less or no experience at all. The results are a drop-in healthcare service delivery and professionalism in our healthcare system. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br><br>Knowledge and experience are very important in improving the employee performance. Poor employee performance as we have today is a direct result of lack of knowledge. We have lost and keep on losing experienced employees, not sharing knowledge to the |

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| | remaining staff. The role of knowledge in improving performance in the department cannot be questioned. If we do not capture this knowledge and make it accessible to new employees so that they can use this to do their work and improve their skills, we will forever be caught in the perpetual mode of poor performance. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br><br>No, except staff meetings which themselves cannot be regarded as informal. There are no facilities except in certain hospital and clinics where we have coffee areas and canteens or social facilities and forums in the department where employees could sit and talk not necessarily about their work but also about general and personal issues. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br><br>This happens all the time because of our politicized environment but also because there is little knowledge to share. While there is natural desire or it is a natural practice in other organisations for employees to share their knowledge with other employees to resolve complex issues, some employees within the department often find a reason to keep that knowledge to themselves. Perhaps because the environment does not encourage nor incentivize them to do so. Lack of trust as well is a problem because no one wants to make mistakes which are often harshly dealt with. There is no culture of knowledge sharing in the department. I guess this is same situation across government departments. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br><br>In the modern information age, the best way to store information is through the electronic means. We have such poor tools and technology within the department that this creates the biggest barriers to storing information. Information is still stored in files and office cabinets. This is the old way of storing information and limits accessibility. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br><br>Very often – as indicated earlier in the monthly EXCO. I also do this when I do regular visitations and roadshows to various healthcare facilities. We do also have inter-departmental workshops and our intranet. . |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br><br>There is just simply no culture of sharing knowledge and no mechanism for that. The biggest challenge as I have mentioned earlier is poor technology and lac of a centralised information repository where all information could be stored and accessed by all |

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| | employees. For as long as there is a hierarchical structure that forces the divisions within the department to work in silos, we will forever remain with the challenge of sharing information. Government bureaucrats do not understand the importance of collaboration and sharing information. Other challenges include lack of openness to sharing because there are no proper organisational guidelines to sharing information and the politicised and bureaucratic procedures involved in sharing information. |

Time of interview: Date: **9/10/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee H)**
Interviewee's years of working experience: **15 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br><br>My role in the department is to implement the department HR policies and suggests to the management team how to strategically manage people as business resources. This includes managing recruiting and hiring employees, coordinating employee benefits and suggesting employee training and development strategies. In this way, HR professionals are consultants, not workers in an isolated business function; they advise managers on many issues related to employees in the department and how they help the department achieve its goals. I work together with managers to develop employees' skills and advise managers and supervisors how to assign employees to different roles in the department. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br><br>The knowledge I have about this organisation is the human resource management policies related to this department but based and in line with the government human resources guidelines. This knowledge is spread across issue like Recruitment and Training, Performance Appraisals, Maintaining Work Atmosphere, Managing Disputes, employee wellness, Developing Public Relations, etc. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br><br>Our mandate in HR is to communicate and implement ideas, policies and cultural and behavioural change in the department. As human resources influence many of the key systems and business processes underpinning effective healthcare service delivery, most of the information requested from colleagues in other divisions of the department or other |

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| | healthcare facilities and hospital in to verify the guidelines on policy interpretation and application to achieve a high performance corporate social responsibility culture. The colleagues also request information on the vision, mission, values and corporate social responsibility strategy development; employee codes of conduct; workforce planning and recruitment; orientation, training and competency development, compensation and performance management; change management and corporate culture; employee involvement and participation; employee communications; measurement, reporting – and celebrating successes along the way; and labour relations and industrial relations issues. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br><br>My experience as an HRM manager was acquired in my previous employment in the same capacity in various private sector companies. The HR knowledge and skills I have acquired through in-house training and formal external training from HR institutions. Working for the department of health also meant that I had to attend training on public sector human resource management processes and procedures and also learn about the public services and administration acts and regulations. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br><br>Most of the information is stored in the department computers, department filing systems and archives. Most of the HR practitioners are experienced and have a lot of knowledgeable to do the work. Most of the information particularly the public administration human resources management guidelines are found in the legislations stored in the department electronic databases and hard copies |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br><br>The department of cause will own the information that I compile and update existing information during the course of my work. However, the knowledge and experience remains with me because I am the one doing the work and the knowledge reside in my head. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br><br>In my experience, knowledge and experience sharing culture is influenced by communication, rules, regulations, routines and the organisational culture. The department is suffering because individuals are having trouble accessing the knowledge they need in order to do their job. Not only can they not access it, sometimes the people who have that information refuse to share. The are several attempts by certain staff members in their respective divisions to share experience and knowledge through meetings, training, mentoring, coaching, etc. This could be through meetings, mentoring, training and workshops. The most regularly used method of sharing knowledge is through the electronic media (emails, electronic memos and the intranet). One cannot rule out the fact that staff do work as teams to resolve challenging |

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| | and complex problems thereby sharing knowledge in the process or have informal meetings over tea discussing work or personal issues. But generally, there is no knowledge sharing culture in the department. |
| 8. | **How do you transfer your own personal knowledge to others?**<br><br>Personal knowledge, in my view, is not so easily shared. This might be because it is not so easily put into words. This is because my knowledge is based crucially on the experiences as an individual whereas shared knowledge does not. I do attempt to share personal knowledge I gained through practice and habituation in meetings or my interaction with colleagues and staff. I also share knowledge through writing articles or using social media. Sharing is important for our own sense-making and cannot be stolen from us anyway. I also use discussions groups, community of practice and "story telling" describing a work and life experiences. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br><br>I use documented procedures a lot in my day to day duties. This is important because we are faced with different challenges in the workplace and we have to ensure that we implement the policies in a fair and equitable manner. We have to use the documented procedures as well because the guidelines change so often and sometimes we have to use our discretion because some situations are very unique and are not catered for in the documented procedures. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br><br>The department's culture is very bureaucratic. Management that has a pyramidal command structure and is very organised with a high degree of formality and protocol in the way it operates. Like all the government departments, it is rigid and tight procedures, policies and constraints; and the company reacts with stringent controls where everyone understands who is in charge and what his responsibilities are for every situation. Decisions are made through an organised process and a strict command and control structure is present at all times. Therefore, the environment is such that it is unlikely to entertain suggestions from staff when they air their opinions. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br><br>Through meetings, the electronic media (emails and intranet), notice boards, departments documents, etc. This I view more as information dissemination as opposed to knowledge and experience sharing. Ja! there is no such thing as knowledge sharing in the department. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?** |

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| | From a human resources management point of view, ideally, we should share and accumulate knowledge even before employees leave the department for whatever reason. We however do not do that but we only do the exit process which involves making sure that they do not take the departments files, they leave the department equipment, or even asking the reason for their departure. As a department, we will most definitely loose the experience and the knowledge which resides in that employees' head and was never documented or shared with anyone in the organisation. The department is suffering performance challenges as a result of lack of experienced and knowledgeable employees who have left and are continuing to leave the department. The much-reported loss of healthcare professionals at our various healthcare entities is one such example – when they leave, they leave with their skills and knowledge |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br><br>Oh! there is no doubt that knowledge improved performance. Knowledge is recognised the world over as an important weapon for sustaining competitive advantage and improving OP. Knowledge is not easily stored electronically, so the department must manage knowledge effectively in order to take full advantage of the skills and experience inherent in their professional staff as well as the knowledge belonging to the various employees of the department. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br><br>I wouldn't know about that but internally within the department we do not have such facilities except the boardrooms or meeting rooms for formal meetings. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br><br>As I have mentioned, the department does not have a culture that encourage employees to share or transfer knowledge. However, that does not mean that employees do not ask questions and work as a temp from time to time. Personally, I have not experienced any staff members refusing to share what they know – they often do share but that would be as result of responding to a question. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br><br>Organisational culture, structure and facilities. The challenge we have is that there because there are no facilities to share knowledge let alone access that knowledge, it is even more impossible to store whatever knowledge there is. The information technology facility is only meant to support and automate certain business processes like finance, supplier chain, human resources, etc. It does not provide common databases or shared repositories to store and access information. Therefore, IT is the biggest barrier. Secondly, because there is no |

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| | knowledge transfer or sharing culture within the department – the organisational culture is also the biggest stumbling block. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>In my day-to-day activities, I interact with staff at various levels. I do share a lot of information and knowledge when I do counselling and training to managers and staff. Ja! I do share information always and very often. I guess this is because of my HR role within the department. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>With my role, none except confidential staff information. The only irritation is that most of the information is largely paper-based and manual. |

Time of interview: Date: **30/10/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee AA)**
Interviewee's years of working experience: **10 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>To provide strategic leadership and implementation of the departmental HR policies and to advise the management team on how to strategically manage people as business resources. My key performance areas include managing the HR department, recruiting and hiring employees, managing the training and development of staff, coordinating employee benefits and managing employee well-being programme for the department. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>The functions of the Gauteng Department of Health, its role and responsibility and how it links with other departments in the Gauteng Provincial Government. I also know about the leadership of the organisation. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Our main key performance area is to develop HR policies for the organisation and communicate them to the entire organisation. Most of the information requested from colleagues in other divisions of the department or other healthcare facilities and hospital is to |

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| | verify the guidelines on policy interpretation and application to achieve a high performance corporate social responsibility culture. The colleagues also request information on the vision, mission, values and corporate social responsibility strategy of the organisation. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>Through reading HR policy manuals, reading books on HR management, attending training and development courses, the internet and social media. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the information is stored in the department computers, department filing systems and archives. Most of the HR practitioners are experienced and have a lot of knowledge to do the work. Most of the information particularly the public administration human resources management guidelines are found in the legislations stored in the department electronic databases and hard copies |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>I believe the ownership of knowledge to do my job better lies with me. The department has various sources of information and knowledge resources like libraries and databased but it is my responsibility to acquire and manage the knowledge and share it with my colleagues. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>The organisation first needs to be a knowledge driven organisation. It must have the culture of knowledge as part of its values. The leadership and management must then drive the culture down to employees on the ground. Knowledge and experiences are shared through inter and intra departmental meetings, electronic email, intranet, forums, training and development courses. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I am of the opinion that knowledge that is not shared is worthless. Many people go to their graves with valuable knowledge that they never shared with anyone. I share my personal knowledge with my colleagues and staff through debates and discussions in meetings, through our social media forum such as WhatsApp, Facebook and linked. I have also identified junior staff members that require mentoring and I run mentorship and coaching programs to assist them. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>I use documented procedures a lot in my day to day duties. This is important because we are faced with different challenges in the workplace and we have to ensure that we implement the policies in a fair and equitable manner. We have to use the documented procedures as well because the guidelines change so often and sometimes we have to use our discretion because some situations are very unique and are not catered for in the documented procedures. |

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| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br><br>The department's culture is very bureaucratic and autocratic. Our department being a government department tends to have a top down style of Management with a high degree of formality and protocol. As much as staff members are encouraged to express their opinions and communicate without fear, the reality is that there is still an autocratic management style. Decisions are made through an organised process and a strict command and control structure is present at all times. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Through meetings, the electronic media (emails and intranet), notice boards, departments documents, forums etc. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>I believe there should be a system in place to tap knowledge from those that have retired to come back as consultants, coaches and mentors to share their knowledge and experiences. It is not that easy to do the same with those that has resigned, left the organisation and joined other organisations. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge is one among many tools that can enhance and improve individual and business performance. Knowledge not only nourishes performance but can also be an important weapon for sustaining competitive advantage and improving OP. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>Social media provides a critical platform for staff to continue to interact informally outside the office. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Employees will only be reluctant to share knowledge if the culture of the organisation is not knowledge driven. I have experienced many situations where some managers have stifled knowledge sharing because of their autocratic management style. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>The biggest barrier is not having a reliable information and knowledge management storage and database management system. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>In my day-to-day interaction with my staff and colleagues. In the interdepartmental forums that I attend as well senior management meeting. I also use the intranet to share my experiences |

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| | to other staff members. I also share a lot of information and knowledge when I do counselling and training to managers and staff. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>A dysfunctional intranet abuse of social media which has led to management restricting the use of the internet by staff during working hours. |

Time of interview: Date: **13/10/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee I)**
Interviewee's years of working experience: **15 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My role in the department is very simple. I keep track of a company's financial transactions. Using standardized guidelines to record and summarise the transactions and presented them in the department's financial report and financial statement such as an income statement and balance sheet. My purpose of financial accounting is not to report the value of the department. Rather, my purpose is to provide enough information for others to assess the value of the department for themselves. If I were to put this in one sentence, my role is the preparation of financial statements - including the balance sheet, income statement and cash flow statement - that encapsulates the company's operating performance over a particular period and financial position at a specific point in time. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>The type of knowledge I have about the department are the information about the total possessions of the departments – Assets, the value of these assets that the department owns – Equity and the value of the assets that people outside the department can lay claim to – liabilities. This effectively means that they type of knowledge I have about the come department are the departments income statement and balance sheet. In preparing the financial documents I need extensive knowledge of the local and international financial rules and regulations like the Generally Accepted Accounting Principles (GAAP) International Financial Reporting Standards (IFRS), public finance management act (PFMA), etc. |

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| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Most of the information requested by colleagues to enable them to do their work properly is more transactional and involves among others the calculation of tax correctly to ensure that the department is on the right track and to allow management to look at certain ratios that guide the management decisions; the calculations that allow the department to price the healthcare services and products; appropriate financial analytics that are tied-in with the department's policies; cash forecasts that are integrated into short-term department plans; capital budget requirements for the department's projects, predicts and services. Most importantly, management in the department needs an understanding of the past and current operations in terms of sales, costs and profit. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I am a qualified financial accountant. I have also worked for various companies as a financial accountant. That is how I have accumulated skills and knowledge to be a professional financial accountant. I have attended several training courses mainly in the PFMA because this is crucial to ensure that the department comply with the regulations and avoid negative audit findings. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>Financial manuals in the department. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>The information is owned by the department, it is the property of the department. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>We share information through our daily interactions when we process transactions from the business units in the department and regional healthcare facilities. These are largely to do with expenditure item budget approvals, etc. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I do spend some time with the staff to educate them about proper financial methodologies and standards. This is to ensure that they can prepare their monthly income and expenditure projections and to process the daily financial transactions within the policy and adhering to financial standards. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>Very often. You cannot execute any financial transition without the use or knowledge of the documented procedures – unless of cause if you already have the knowledge and experience to do such things. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?** |

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| | The department is not open at all to suggestions in terms of dong this differently. Remember that we have policies, standards and guidelines on how to do this work. Therefore, any suggestion is not worth anything because these policies are fixed and they come from above. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Through perhaps meetings to discuss budgets allocations and financial planning. This also happens once in a while. In short I can say that there is very little knowledge sharing. Besides, other business units are more focused in their professional areas like healthcare services and have very little interest in financial knowledge. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>Not a t all |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>I would say that knowledge and experience does improve performance because people will know what to do and do it correctly. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>No. you cannot discuss in my case the departmental financials in open and social environments. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Yes, I do not necessarily share my knowledge of company financial information with anybody except people in management who have that right to know. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>I do not have any barriers because most of our information is stored in the financial systems. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>I share information with managers from other business units on a monthly basis when I present the monthly and interring financial statements. Sometimes I do share financial information with senior managers when they require information about their budget status. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>Information confidentiality and security. You see we cannot share the department financial information with people who have not been cleared to receive such information. |

Time of interview: Date: **24/10/ 2014**
Place: **Gauteng Department of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee AB)**

Interviewee's years of working experience: 14 **years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>I am responsible for monitoring and evaluation of the performance of all our 34 hospitals and 230 clinics in Gauteng. This involves areas like patient care, budgets and general management of the institutions |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>I have worked in the department for many years in various departments from clinical to administration. |
| 3 | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Most of the request are to do with the performance of various public health institutions |
| 4 | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I have worked in some of the institution myself. I have personal experience with these institutions and the challenges they face. Generally, information is gathered from our records and the records of various institutions. |
| 5 | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the knowledge is sitting with institutions themselves. That is where public health service actually takes place. |
| 6 | **Who owns the knowledge that you acquire in your present job?**<br>The department owns the knowledge because it is sitting in our computer systems and our file storage facilities. |
| 7 | **How do members of staff share experiences and knowledge in this organisation?**<br>Staff members share information through reports that we generate for management and other key stakeholders. |
| 8. | **How do you transfer your own personal knowledge to others?**<br><br>We do various staff training on the system that we use and the data that has been collected |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>Most of our work entails relying on documented case files and facts to assess performance of various health institutions. |

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| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>The department is always open to suggestion from staff and the general public. Most of these ideas and suggestions are fed into the knowledge process in order to generate some improvements in our service delivery. This also helps us to educate the general public about public health services. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Knowledge is exchanged by way of reports to ensure that the level of public health delivery is improved |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>Most of the knowledge about various institutions in the public health in Gauteng is stored in our system to ensure that we can keep it. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>This is crucial. In the monitoring and Evaluation field, it is important to understand various demographics of every health care institution for you to be able to monitor its performance. You need to know for example where the health care institution is, which area it is servicing, the population around that area, unemployment, crime, etc. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>Very informal. Staff does share their challenges and so do various clinics and hospitals. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Among health institutions you often find reluctance to share information due to either confidentiality or information incompatibility due to different computer systems. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>Different computer systems that we have at various health care facilities. Also, our network infrastructure is not adequate. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>This is done all the time. Performance monitoring and evaluation has to engage all the divisions within the department and also across health care institutions to ensure that we can have a consolidate view of progress or lack of it. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>We just have technology challenges especially if they are using different systems |

Time of interview: Date: **24/11/2014**

Place: **Gauteng Department of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee J)**
Interviewee's years of working experience: **12 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My job is concerned with how financial resources are generated, allocated and used in our public health systems. I play an important role in informing healthcare policies. My role is a key element of the planning and evaluation process, resource allocation choices and the sound financial planning to strengthen our healthcare systems that contributes directly to improving the impact of health care interventions. |
| 2. | What type of knowledge would you say you have about this organisation?<br>A central concern in the health care system is the rising cost of services and the growing realisation that resources are limited. My role in health economics and finance is focused on both the general economics of personal health services as well as the specifics of program and organisational finance. In the former category, my knowledge is on issues of fair and effective distribution of resources in our public healthcare system. I have taken part and accumulated a lot of knowledge in discussions on areas of Health Insurance, Economic evaluation: guiding cost-effective resource allocations, Health system strengthening with integrated approaches. |
| 3 | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>The colleagues and management would typically like to know and request assistance on issues like the improvement of our healthcare and social welfare status of the population on an equitable basis, increasing access to and utilisation of high quality services, making healthcare services more responsive to the population with an attention to equity and providing services that are affordable to the citizens of Gauteng and indeed the country. |
| 4 | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I have 8 years of experience in designing and implementing health finance interventions in both the public and private healthcare systems for developing countries. In my various occupations, I have participated and trained in areas of health finance policy, financial management, public expenditure reviews, national health accounts, health service contracting and performance-based financing, costing of benefit packages, benefit analysis, financial risk protection and health insurance models. |

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| 5 | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the work we do is based on case studies and information from medical research institutions. We commission research in certain areas in order to acquire more in-depth information to compile or design a financing or funding model that could be used to address that area. We use also a lot of information for information databases from across the world. |
| 6 | **Who owns the knowledge that you acquire in your present job?**<br>The information that we collect and the report that we compile in the process of our work is stored in both electronic and hard copies and it belongs to the department. |
| 7 | **How do members of staff share experiences and knowledge in this organisation?**<br>The information is shared with most of the members of staff through documents in the department filing and archive system or on the department website. However, we do hold briefing sessions to both management and staff to brief them on the results of financed projects on the status of the healthcare and social welfare, improvement to access to the utilisation of high quality services and quality of healthcare service in general. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I do a lot of briefing myself and this way I am able to share and transfer my personal knowledge to the majority of our staff members. In my department, I do have several staff members that I provide mentoring mainly to assist them with their career development in health economics and finance. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>We do use from time to time the documented procedures particularly on financing models and finance regulation. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>As a department, we are fairly open to different views and suggestions. This is mainly because whatever models we come up with, will be informed by unique issues that prevail within the area under investigation. To come to a particular model will require robust discussions and unique proposals. Therefore, we do encourage suggestions and opinions in the department. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Mainly through discussions in teams and discussion panels. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>The assumption that can come to is that in the process of our robust discussions, this is how largely we could tap on the knowledge of more experienced people before they leave the organisation. Sometimes we do contract in those retired employees to assist the less |

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| | experience permanent staff. This practice helps a lot since those retired staff have a wealth of knowledge and experience that they retained in their heads. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>We need lots and lots of knowledge in order to build up our expertise and experience so as to improve our individual performance and the OP. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>No, we do not have that. What we have are more formal structure for effective collaboration and interaction. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>No I have not experienced such a behaviour from our staff. As I have mentioned, we interact a lot in discussions to share our experiences and understanding of the information and facts as presented to us. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>We do not really have serious barriers because most of the documents and plans we produce are stored in the company archives and posted on the department website. They are therefore there for everyone to see including members of the public. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>We do that quite a lot. This is important for other departments to read the reports so that they can assess their contribution and effectiveness in achieving the department's goals and objectives. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>I really cannot think of any challenge except peoples' availability to attend seminars and briefing sessions. |

Time of interview: Date: **12/11/ 2014**
Place: **Gauteng Department of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee AC)**
Interviewee's years of working experience: **18 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?** |

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| | My Job entails managing the infrastructure of the department of health. Commissioning of new infrastructure be it building s or equipment for the department of health |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>I have been in the department for 4 years and I am fairly knowledgeable about the operational model and what the department is trying to achieve in terms of public health care. |
| 3 | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Basically, how we can use the departments infrastructure reach to improve service delivery (public health especially primary health care) |
| 4 | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>By being involved in the projects within the department. Most projects in the department if not all of them have to interface with infrastructure either directly or indirectly. |
| 5 | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the knowledge is embedded in legislation, Department's policies and procedures. Being in the Healthcare arena one is guided by these pieces of documents. Most of the other departmental information is stored in the department computers. |
| 6 | **Who owns the knowledge that you acquire in your present job?**<br>The department is the primary owner of this knowledge. |
| 7 | **How do members of staff share experiences and knowledge in this organisation?**<br>We often have our Strategic plenary session at the beginning of the financial year. On a monthly basis, we have our senior management meetings. From the projects point of view we have various steering committee meetings. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I use the planned sessions on monthly and yearly basis. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>That is on the daily basis. The health service delivery in south Africa and the rest of the developing and developed countries is highly regulated. Therefore, your source documents are often legislation and internal departmental policies and procedures. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>The department is open to suggestion and often gets inputs from academic hospitals and the general public. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Knowledge is imparted by ways of seminars and monthly meetings among staff. This also includes our engagements with academic hospitals and universities from time to time. |

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| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>The department tries to ensure that ways of delivering public health care is documented so that it can be shared. We do tap into retirees through incentives of part time work. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge repository is crucial in improving the delivery of public health service. You are able to avoid mistakes and you can improve the level of service. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>I am not sure about that. However, staff members do engage in informal information sharing during breaks or encountering public complaints. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>That generally affects junior staff that is in administrative roles. Clinical staff generally is professionals that are always willing to learn from their peers. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>I think technology (computers) changes rapidly and we often find ourselves not having the budgets to acquire latest devices to store and access our archives. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>This is done very often. Given the nature of health care service. Various clinical departments and administrative departments have to share information to be able to deliver patient health care. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>Given the nature of patient confidentiality, it is often a big barrier to freely exchange information with 3rd parties. |

Time of interview: Date: **17/11/2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee K)**
Interviewee's years of working experience: **12 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

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| Investigating knowledge management practices in the **Gauteng Department of Health** |

| No | Question and response |
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| 1. | **Can you tell me what your job is all about?**<br>I am responsible for ensuring that our service to all our stakeholders meets the established standards of quality, including reliability, usability, performance and effectiveness. My key performance areas include drafting and managing QA policies and standards, coordination and communication of the policies to all staff members, conducting monitoring tests, investigating customer complaints and non-conformance issues. I also analyse data to identify areas for improvement in the Quality System. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>The functions of the Gauteng Department of Health, its role and responsibility and how it links with other departments in the Gauteng Provincial Government. I also know about the leadership of the organisation. The department is an ISO 9001 - Quality management and OHSAS 18001 - Health and safety management accredited organisation. What I also know is that Quality assurance is a way of preventing mistakes or defects in healthcare products and avoiding problems when delivering healthcare services to customers; The department focused on providing confidence that quality requirements will be fulfilled. This defect prevention in quality assurance differs subtly from defect detection and rejection in quality control and has been referred to as a shift left as it focuses on quality earlier in the process. The department quality assurance comprises administrative and procedural activities implemented in a quality system so that the requirements and goals for our healthcare products, service or activity will be fulfilled. It is the systematic measurement, comparison with a standard, monitoring of processes and an associated feedback loop that confers error prevention. This can be contrasted with quality control, which is focused on process output. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Our main key performance area is developing Quality Assurance policies for the organisation and communicates them to the entire organisation. Most of the information requested from colleagues in other divisions of the department or other healthcare facilities and hospital is to verify the guidelines on QA policy interpretation and application to achieve a high performance in the organisation. The colleagues mainly request for policies, standards, audit reports, quality management systems and customer complaints management systems. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>Through reading QA policy manuals, reading books on Safety, Health, Environmental, Risk and Quality (SHERQ) management, attending training and development courses, the internet and social media. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the information is stored in the policy documents, quality assurance documents and manuals, department computer databases, department filing systems and archives. Most of |

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| | the QA practitioners are experienced and have a lot of knowledge to do the work. Most of the information particularly the public administration quality assurance procedures guidelines are found in the legislations stored in the department electronic databases and hard copies |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>The documented information is the asset of the department except I believe the ownership of knowledge to do my job lies with me. The department has various sources of information and knowledge resources like libraries and databases but it is my responsibility to acquire and manage the knowledge and share it with my colleagues. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>As a knowledge intensive and knowledge driven organisation, we have as a department a culture of knowledge as part of its values. The leadership and management must then drive the culture down to employees on the ground. Knowledge and experiences are shared through inter and intra departmental meetings, electronic email, intranet, forums, training and development courses. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I interact a lot with my employees and my peers. It is in these types of interactions that I share a lot of my knowledge and ideas. I share my personal knowledge with my colleagues and staff through debates and discussions in meetings, through our social media forum such as WhatsApp, Facebook and LinkedIn. I have also identified junior staff members that require mentoring and I run mentorship and coaching programs to assist them. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>Very often. The Quality Assurance department is a highly document management driven department. Not only am I responsible for formulating the QA policies, have I also needed to document and file them so they can be accessible to all our staff and key stakeholders. The procedures also have to be updated quite often because new QA systems are continuously being introduced in the industry. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>The organisation says it is open to suggestions from staff but the proof is always in the eating of the pudding. The leadership and management style will always inform what actually happens on the ground. As much as staff members are encouraged to express their opinions and communicate without fear, the reality is that there is still an autocratic management style... Decisions are made through an organised process and a strict command and control structure is present at all times. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br><br>Knowledge is transferred between departments through interdepartmental meetings, the electronic media (emails and intranet), notice boards, departments documents, forums etc. |

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| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>I believe there should be a system in place to tap knowledge from those that have retired to come back as consultants, coaches and mentors to share their knowledge and experiences. It is not that easy to do the same with those that has resigned, left the organisation and joined other organisations. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>I believe knowledge is very important in improving both the individual and OP. The introduction of the internet and social media has also made it easier to share information and knowledge through the various platforms that are available to users. Knowledge not only nourishes performance but can also be an important weapon for sustaining competitive advantage and improving OP. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>Not really except for those that use social media platforms such as Facebook. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Employees will only be reluctant to share knowledge if the culture of the organisation does not permit it. Because of our bureaucratic and autocratic management, leadership and managers have themselves become a serious barrier to the sharing of knowledge in the organisation. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>The biggest barrier is less automation particularly when dealing with information. Our ICT facilities and grossly inadequate and unreliable due to lack of a centralized and often inaccessible information and knowledge management storage, information databases and knowledge repositories. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>II have started a forum called Quality Management Forum where I invited all key stakeholders on a monthly basis to share information, knowledge and experiences on matters related to Quality. I also attend other interdepartmental forums as well as other senior management meetings. I also use the intranet to share my experiences to other staff members. I also share a lot of information and knowledge when I do counselling and training to managers and staff. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>Again, it goes back to organisational culture. Some people are just not wired up to share information and this makes it quite a challenge. It is therefore important that the organisation has a culture of sharing and also that those in positions of management encourages their staff to share information and knowledge. |

Time of interview: Date: **21/10/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee A)**
Interviewee's years of working experience: 3**2 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My role in the department is to look at the healthcare policies interpretation, update and implementation as they are amended by the National Health Department from time to time. This also involves ensuring that adherence, compliance and monitoring. The policy sets out the main objectives of Government to assure quality in healthcare and to continuously improve the care that is being provided. The policies are designed to achieve the goal of a quality healthcare system and requires a national commitment to measure, improve and maintain high-quality healthcare for all its citizens. This involves measuring the gap between standards and actual practice and working out ways to close the gap. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>I have been with this organisation for 5 years after having worked in the National Department of Health for 2 years as a chief Director for policy and planning. My knowledge about this department over and above Healthcare policies is about how employees are trained about changes in policy and the depth of understanding of the entire healthcare policies. The type of knowledge I have about this department is also about the departmental strategies and objectives, the medium and long term plans to achieve the desired outcomes as per the healthcare policies. We conduct regular visitations and customer survey to identify the effectiveness healthcare policies and how they impact patients. Yes, I have the knowledge of how the department is perceived by citizens out there and we prepare input to management for corrective actions. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Most of the information requested from colleagues in other divisions of the department or other healthcare facilities and hospital in to verify the guidelines on policy interpretation and application. The colleagues also request information on policy and regulations updates as these do occur very frequently during the year. The healthcare policy and regulation changes taking place in our country's healthcare systems and the efforts to improve quality mean that colleagues and many health professionals are taking on new roles and responsibilities. Some colleagues are excited about these changes and the new opportunities they create. Others are unsure about whether their training has adequately |

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| | prepared them for such dramatic changes. Also, while they understand the need for change, many of the colleagues and health professionals want a greater clarity and voice in the process of formulating policies for change. Colleagues and health professionals who are strongly dedicated to caring for patients, knowledgeable, well trained, committed to continuous quality improvement and secure in their employment, need to be further developed to improve the quality of healthcare. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>As mentioned earlier, I acquired most of my skills from my previous job as a Chief Director at the National Department of Health. The training policy of the department was that providing quality care to patients requires training skilled health workers and establishing a culture that values lifelong learning and recognises its important role in improving quality. Therefore, continuous quality improvement skills and techniques were an integral part of the management training of employees and health workers. A learning framework for quality assurance was developed and the National Health Council used this framework to ensure that a critical mass of expertise is established at each level of care. Every training programme provided a strategy for on-going support and mentorship. Using my knowledge and expertise, we run continuous training and workshops throughout the department and regional healthcare entities. Consistent local action is needed to ensure that national policies, standards and guidelines are reflected in the delivery of healthcare services. The colleagues at the district health system are ideally positioned to facilitate this local action, because they are close enough to the community to be responsive to their needs and they are a powerful mechanism for improving the quality of healthcare. The Level II (Regional), Level III (Tertiary) and Specialised Hospitals also do participate on the workshops and training sessions and also do receive specialised attention. The need for action at the local and hospital level demands that competent health professionals are available to assure quality in health care and to continuously improve the care that is being provided. Competent and skilled health professionals can only be obtained by continual training and professional development. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the information is stored in the department computers. Knowledge in the department mostly reside with experienced and senior employees. However, most of the old and new healthcare legislation is stored in files and databases in the system. All departments and employees have access to an extensive pool of knowledge - whether this is their understanding healthcare policies or patients' needs and the department's operational plans, strategies and objectives or healthcare system and departmental business. The way the department gathers, shares and exploits this knowledge is central to our ability to develop successfully. The management of this knowledge and information can benefit everyone in the department. |
| 6. | **Who owns the knowledge that you acquire in your present job?** |

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| | The information is owned by the department, it is the property of the department and there are department policies that governs the management and use of the department's information. However, the experience and knowledge attained from doing my job is mine because it is not documented anywhere. This is where we as a department have a challenge particularly when we lose our more experience staff for whatever reason. Nevertheless, useful and important knowledge already exists in your business in the form of experienced and more knowledgeable employees, the processes for our healthcare services, files of documents held digitally and on paper, operational plans for future activities, such as strategies for new healthcare services. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>How staff share information is determined by the practices in various departments. This could be through meetings, mentoring, training and workshops. The most regularly used method of sharing information is through our internal website and emails. Some of the sharing is the formal top-down approach where an instruction or formal memo is send out to all staff. There is also a lot of and informal knowledge and experience sharing outside the formal departmental structure that fills the gaps, maintains the linkages and handles the onetime situations. Indeed, informal learning also takes place through daily social interactions such as participation in group activities, working alongside others, tackling challenging tasks and working with customers and patients. The success of these forms of informal learning is highly dependent upon our environment and the quality of our human relationships in the workplace. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>As an individual I manage information that I receive and, make sense of it and share with others. Sharing is important for our own sense-making. It grounds our thinking in reality. Nobody can steal our knowledge anyway. Sharing knowledge is informal but it's also more robust. This is what many of us already do, with blogs and social media. I also use discussions and "story telling" describing a similar experience whereby a method or technique was developed or used to solve a problem. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>Very often. All the government legislation and regulations are published and saved on hardcopy form. Although The use of electronic mail (e-mail) is increasingly important for both professional and private communication, e-mail cannot be 100% secure or confidential. We always follow the local protocols for keeping computer records confidential and always apply the Standard Operating Procedure. Documented procedures provide information about the documents which contain healthcare legislation and guidelines. Therefore, it is critically important to always refer to the documented procedures on how to implement healthcare practices. |

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| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>This is the public sector. Employees encounter governments "as they are," that is, governments with distinct structures; in cultures with rich histories and traditions; in sets of organisations characterized by complex, interlocking processes; and in institutional environments composed of sedimentary layers of legislation, practices and politics. Practically, effective communication is critical to running a good organisation. However, communicating well is easier said than done in our environment. Because of the bureaucracy and protocol driven organisation like government department, there is very little encouragement to voice one's opinion but to execute according to policy without questioning. Management do not often meet let alone socialise with junior staff. Therefore, any communication with staff is mostly top-down. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Knowledge is mostly communicated or transferred through making information available on the electronic media (emails and intranet). Also, the use of departments documents which are often inaccessible because they are managers' offices. There are also training and workshops which our staff do attend from time to time including regular meetings. However, it is difficult to classify this as knowledge sharing as very little interaction and teamwork is encouraged for employees to share what they have learn among themselves to resolve problems. There is no culture of knowledge sharing knowledge or transferring knowledge. Employees do what they have to do as directed in a mechanical way with no innovative way of doing things. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>No. "What knowledge?" I get the sense that no one including management believe that the department lose any knowledge when an employee leaves. The belief is that information is left behind in computers or department files. We do not even have HR practices where we conduct exit interviews or handover processes. It's very pathetic. In the current situation, we even have employees who are older and more experienced being offered packages to take early retirement mainly to make way for younger black employees. This is very sad because older employees carry with them a lot of knowledge about healthcare services. This ultimately led to a drop in good service delivery and professionalism in the way we run the department. The loss of healthcare professional professionals is one such example – when they leave, they leave with their skills and knowledge |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Like I have mentioned to you, if you do not have knowledge you will never learn and you cannot be experienced. Therefore, the impact of this most often will be lack or lack of employee performance. Poor employee performance will lead to general department poor performance. Losing experienced employees, not sharing knowledge in the department |

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| | will certainly result in poor OP. The role of knowledge in improving performance in the department is crucial. We need to retain knowledgeable and experience employees and let them show and impart their knowledge to younger employees as and when they join the department. We need to capture this knowledge and make it accessible to new employees so that they can use this over and above the written policy documents and healthcare regulations. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>I am not sure about that. However, as I have indicated earlier, there are meetings and workshops which have more of a formal structure. We do not have canteens or social facilities and forums in the department where employees could sit and talk about their work and everything and anything. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Yes, quite often and this is a serious problem. This is an inherent problem within the department and public sector in general. While employees are supposed to share their knowledge with other employees for the benefit of the company and to resolve complex issues, some employees within the department often find a reason to keep that knowledge to themselves. Perhaps they believe that they will lose some status or power; sometimes employees who share knowledge will then be judged or evaluated based on that knowledge in the worst cases they can also be reprimanded; and often employees who don't trust their colleagues in the department will be reluctant to share knowledge. There are other situational factors at play as ell namely that the knowledge is complex, the knowledge is not task-related, or there is no culture of knowledge sharing in the organisation — will also reduce knowledge sharing. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>Our biggest barrier I would say is the organisational policy and directives to storing information received more efficiently and effectively. Also, poor tools and technology are the biggest barriers to storing information. Because of the way information confidentiality concept is applied generally within the department and perhaps generally in government, information is often locked in cabinets and offices. This manner of storing information is very old and not cost effective at all particularly in this information, knowledge and digital era. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>Always and very often. This is precisely my role within the department to ensure that all healthcare policies and regulations are known and are implemented. Therefore, as I have mentioned earlier, we hold regular workshops, training as well as updating information on our intranet. In this way, information is shared to all employees in the department. |

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| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>There are many challenges. For example, people have a lot of work to do. If they don't truly underhand the importance of collaboration, they won't share information and knowledge. Information sharing is essential for collaborative group work. My view is that these challenges in information sharing in our department are influenced by inter-departmental, inter-cultural and inter-disciplinary differences which exist in the department. The biggest challenge is the silo operations within the department which is a leadership problem. If leadership does not understand the importance of collaboration and sharing information, it will be difficult for the remainder of the department healthcare operations team to make progress in the endeavour. It is difficult to build a knowledge sharing program without understanding what one has set out to build. Leadership within the department needs to embrace the concept. Further, leadership needs to outline and articulate a strong vision and a high-level process for information sharing. This will give information sharing program credibility within the department and empowers the healthcare operations personnel to accomplish the information sharing goals set for them by leadership. The other challenge we have is poor technology and poor IT platform to share information. The department must invest in the technology that facilitates information sharing something that we currently do not have in the department. Other challenges include lack of openness to sharing, no proper organisational guidelines to sharing information and the politicised and bureaucratic procedures involved in sharing information. |

Time of interview: Date: **12/11/ 2014**
Place: **Dr G Mukhari Hospital, 3111 Setlogelo Drive, Ga-Rankuwa,**
Interviewee's position: **(Interviewee L)**
Interviewee's years of working experience: **15 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My job is all about developing people and making sure their and the company goals are clear. It is my role to clearly communicates a vision of what the organisation is becoming, which is reinforced constantly by every means available, keeping the organisation focused on its goals and strategies to achieve the hospital's mission and its strategic initiatives. In the natural course of business distractions often cause the hospital to unintentionally drift |

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| | from its intended vision. To allow for this, I need to place top performers in the right positions to manage day-to-day operations, develop strong leadership and culture in their organisation and ultimately responsible for holding the team accountable to deliver our plans." The single most important thing I do is to create a future destination for our organisation by establishing a viable set of strategies to reach it and engage a talented team of healthcare professionals to make it happen. Further, my role is to ensure that Dr G Mukhari hospital stays focused on what is most important. As an aside, there are overwhelming factors that pull our leadership in many directions, so it is incumbent on me to recognise this and to focus the organisation to achieve optimum results. As we navigate the ever-changing healthcare landscape, I believe a crucial part of my role is to nurture the innovative environment at Dr G Mukhari hospital and provide concrete opportunities for our specialized departments and staff to try out new ideas. From innovation units piloting new models of healthcare that encourage bold thinking and hospital-wide events that promote collaboration, I know that the answers to so many of the challenges we face in healthcare are right here — and my role is to provide an environment where those answers can be found and future innovations can flourish." |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>A hospital is an extremely complex healthcare organisations, by its structure and organisation, operate in a constantly changing environment and such situation implies and requires complex knowledge and demanding healthcare management. Therefore, in order to manage a hospital like this one in a competent manner, I needed to be familiar with problems in health care. Therefore, communication is very important in this environment. The structure of a hospital, however, with many departments, employees and physicians, may make communication even more important for leading the organisation. My knowledge of this environment is to communicate clearly. My responsibility is to keep employees, staff and physicians informed of the hospital's plans, including progress on key initiatives and intentions to form affiliations or partnerships. Furthermore, the knowledge I have is that a hospital like ours, is how we continue to stay financially viable while delivering the unique mission of improving health for patients through our regional healthcare centres, teaching the next generation of healthcare professionals and conducting clinical and basic science research that allows us to transform healthcare discoveries into improved outcomes for patients. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>My colleagues and staff often require knowledge and information about the hospital's strategies. Our strategies are based on our strategic plan and pillar goals. These include over and above the national health plan, the expanding and strengthening of our centers of excellence and core clinical programs, delivering consistent excellent access and healthcare services for every patient every time, expanding our strategic partnerships in the region, expanding our network of primary and secondary healthcare, creating more |

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| | capacity for tertiary and quaternary care and continuing to strengthen our teaching and research programs. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>Nobody told me that I would routinely wake up at 4:00 a.m. worrying about things that I have absolutely no control over. And remembering the things that I am supposed to have some control over but forgot about in the crush of all the other things that I'm supposed to remember. Most of my skills and knowledge as well as experience were acquired through management and leadership training on healthcare. This included healthcare spending. However, I've learnt that good management in the healthcare isn't just a financial matter, since patient outcomes is the ultimate measure of a hospital's performance. But excellent hospital leadership, to oversee both the financial and clinical dimensions of care, is central to sustainability. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>This is somewhat of a challenge for us. One thing to consider is the kind of information that is being stored -- whether it's images, patient data or critical hospital information – this is what is currently dictating what storage method to use. We use organisational computer databases, a picture archiving and communication system, paper based filing and archiving. However, because of this multitude of storage medium, we often find ourselves with inaccessible or unavailable information. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>All the stored information on the hospital's storage infrastructure including documented hard copies is the property of the hospital. However, there is also knowledge and experience which belongs to the individual who have acquired it. This cannot be taken away from them. When they leave the organisation they will certainly leave with it. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>Look, solving problems and making optimal decisions in healthcare is heavily dependent on access to knowledge. An environment where staff share and transfer knowledge can help the organisation to achieve its goals and objectives. Therefore, the staff in general is not likely to share their knowledge unless they think it is valuable and important. In our environment, to facilitate knowledge sharing we have the interdisciplinary training - the transfer of tacit knowledge which occurs through apprenticeship style work patterns; promoted knowledge sharing using the internet and online communities and other knowledge enabling technologies like groupware, portals, videoconferencing, etc.). |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I take part in regular team meeting internally within the hospital and outside. Naturally, I share my knowledge in order to find a solution and this is directly linked to the collaborative aspect of our culture in the hospital and how we operate together. In order to share my personal knowledge, I rely on others to listen and react to their ideas. |

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| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>In our environment particularly on clinical matters, we use documented procedure extensively. Not only is this required by the guidelines but it is a medical practice requirement. This mainly to ensure that proper and defined procedures are followed and adhered to by all medical professional when attending to a patient. Information captured is documented in accordance with the documented procedures to ensure that there is no confusion when reading the patients' medical history at a later stage when it is required. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>Different views and suggestions from the staff are always welcomed. We deal with an environment where new cases present themselves all the time. Although the procedures performed will be the same but the manner in which we put them into practice would be different depending on the situation at hand. Therefore, is expected that the staff will come up with new ideas and suggestion of doing things better. Yes, our environment is very open to suggestions from staff. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Over and above using the email, internet, online communities and other knowledge enabling technologies like groupware, portals, videoconferencing, etc.), knowledge is transferred between departments through departmental meetings. We also have the debriefing sessions where we discuss the various cases that doctors dealt with during the course of their duties. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>This is done through the various forms that I have mentioned but most importantly through forums, debriefing sessions, etc. We do not have formal HR processes like mentoring, coaching or handover processes for resigning staff. It becomes a bit painful to see people depart with such a wealth of knowledge. Even though some forms of intellectual capital are transferable, internal knowledge is not easily copied. This means that the knowledge anchored in employees' minds can get lost if they decide to leave the organisation. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>I think that through creating, accumulating, sharing, organising and utilising knowledge, organisations can enhance OP. For healthcare organisation like ours, the time of rapid technological change is also the time of incessant struggle for maintaining a competitive advantage. It is obvious that knowledge is becoming the most important factor of better OP and service delivery. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?** |

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| | No cannot say informal per se but they do have staff canteen where the staff can interact socially. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>No. we have a culture in our organisation where information is shared freely in workshops, meetings, user groups, etc. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>We have no appropriate technology. This is a general problem throughout the entire public healthcare system in Gauteng province. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>This is part of our daily learning. Therefore, we share information between business units on a regular basis. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>No challenges |

Time of interview: Date: **04/11/ 2014**
Place: **Helen Joseph Tertiary Hospital**, **Perth Rd, Johannesburg.**
Interviewee's position: **Interviewee AD**
Interviewee's years of working experience: **15 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>In terms of the National Health Act, 2003 (act no.61 of 2003) policy on the management of public hospitals, my role is to plan, direct, co-ordinate and manage health care and support services effectively and efficiently as an integral part of the health service delivery in the area served by the hospital; and to represent the hospital authoritatively at provincial and public forums. Develop an organisational and management framework for improving the quality of care – this is a "duty of quality" relating to the organisation as a whole, not just to the individuals within it. I have to also develop a comprehensive organisational strategy for improving the quality of healthcare. There is a focus on clinical leadership although it is understood that this must be accountable to the CEO as well as national clinical guidelines and standards. Clear communication of the department's vision, mission |

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| | and objectives to the entire department and related entities is crucial making sure that the employees' goals and the company goals are clear. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>Our department is part of the public healthcare system. The knowledge I have is broadly within this area. The public healthcare sector is stretched and under-resourced in places. The Department of Health has an overall responsibility for healthcare in the country, with a specific responsibility for public healthcare. High levels of poverty and unemployment mean healthcare is largely the burden of the state. Unfortunately, the public healthcare system in South Africa is complicated and fragmented. It is being reformed in terms of strategy, infrastructure and service delivery. With less resources and more poor people, cash-strapped provinces face greater health challenges. To address some of the resource and service delivery problems facing the public healthcare sector, partnerships between the public and private healthcare sectors are being forged. Some private hospitals are now offering beds and providing medical care to public sector patients. They are also beginning to offer post-graduate teaching facilities to university medical faculties in an effort to stop the flow of doctors out of the country. To make progress towards equal access to quality healthcare in South Africa, the strategic use of all current resources of both the private and public healthcare sectors is necessary. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Knowledge and information about the hospital's strategies and operational plans are the knowledge needs that are constantly required by my colleagues and staff. These include the national department of health 10-point plan, delivering consistent excellent access and healthcare services for every patient in the province, expanding our network of primary and secondary healthcare, among others. Some of the knowledge required includes concepts and methods that requires supervision and coaching, plans and guides the work of others, leads and directs people or groups of recognised specialists and be able to perform in-depth analysis of their work and finally, leads the direction of the department within the broader organisation. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>Most of my skills and knowledge have been acquired through experience through my previous engagement in similar roles at various public hospitals (Sterkfontein, Chris Hani Baragwaneth, etc.) and through various competency training offered by the department of public service and administration (DPSA) namely, strategic capability and leadership; programme and project management; financial management; change management; knowledge management; service delivery innovation; problem solving and analysis; people management and empowerment; client orientation and customer focus; communication; and honesty and integrity. However, I've learnt that good management in |

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| | the healthcare is all about healthcare service delivery and patient experience and these are the ultimate measure of a hospital's performance. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the information is available in the government websites. For example, the national department of health and the Gauteng provincial department of health will contain on the websites documents on policies, regulations and all various healthcare services offered and where they are offered. Hospital patients' records is an area where there are still some huge challenges in that most of these records are still stored on files and hard copies which are archived in the hospital library. This is largely because there still debates around Doctor/Patient confidentiality issues. However, the technology is there where we can electronically store these records and make it accessible on a need to know basis. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>All the stored information on the hospital's data storage infrastructure is (computer database and files in the libraries) are the property of the department. I do not think that that is in dispute. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>I think that the staff shares their experience and knowledge through their day to day interaction when performing their duties to solving problems and making decisions. There is always a new thing to learn in this environment because patients come to the hospitals with very different injuries, sicknesses and complications. Each one of these cases to a certain extent will require exchange of views and ideas about how to deal with it - this is sharing of knowledge in teamwork. Generally, the staff in their various teams does share their knowledge unless they think that it is not valuable and important. We also use social media, internet and other electronic means (i.e. SMS) to communicate and share information. We have weekly meetings and debriefing sessions with healthcare professionals where information and knowledge is shared. I know that our doctors do use the internet, teleconferencing and videoconferencing to liaise with their peers abroad or in other provincial hospital. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I am part of the team and I take part in all interactions to share personal knowledge and experience. I chair various staff team meeting internally where I give feedback on the status of the hospitals, how we are progressing with our operational plans and any other operational or management issue that the hospital is dealing with. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>We use documented procedure in almost every operational activity we are involved in. It sounds pedantic but it is important in this environment to ensure consistency in the entire public sector healthcare system and indeed private healthcare system. Information must be captured accurately in a format that is known and understood by all. Remember the |

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| | patients' medical history might be need by another doctor locally and even internationally to accurately diagnose patient in an event of a medical emergency. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>Our hospital is very accommodating to staff suggestions. We appreciate these suggestions for simple reason that, as I have alluded to earlier, we have different and unique cases that we deal with on a daily basis. Therefore, staff members who deal with these cases will forever make different decisions to resolve unique issues facing them. Therefore, we will always have suggestions from staff on how to continuously improve on our services to patients. We are open to different views as well. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Through email, teleconferencing, videoconferencing and through departmental meetings. Given the inadequacy of our ICT infrastructure, these methods are filling the gap. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>Our personnel management systems are slow and unresponsive Training, career paths, remuneration and job satisfaction are inadequate to attract, retain and motivate good hospital managers and healthcare professionals. There is systematic underdevelopment of management skills and operational systems. These are some of the problems we have in retaining staff with loads of knowledge and experience. We lose them all. Physical information stored in files and accessible databases are transferable but knowledge and experience in peoples' heads is not easily copied. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>There is no doubt in my mind that knowledge has a direct impact on improving OP. I read a little about knowledge management and in those articles, that I've read the empirical investigation also confirmed a positive effect of knowledge management practices on OP. There are absolutely no knowledge management practices in our hospital or the department except in informal ways unbeknown to the employees. Therefore, this tells you that we have no formal knowledge sharing or knowledge transfer culture in our organisation and cannot be in apposition to improve on our OP. Knowledge is the most important factor of better OP and service delivery - that is a fact. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>No, we do not have. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Not at all. You see, because of the nature of our operations, the staff to a certain extent do not have an option but to share. Perhaps even those who are reluctant to share will |

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| | find themselves in need of some information which they do not have and might find other team mates who will not share in revenge. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>The biggest barriers are the reluctance by management to engage in change given the enormous changes the healthcare professions are experiencing as result of digitization. We are part of the global economy and technology has so advanced that information is available and accessible electronically. If we keep on wasting time and dragging our feet instead of investing modern technology, we are going to find ourselves still stuck in the manual processing of information in hardcopy files. This is going to waste time and cumbersome to keep an ever-bulging file up to date. Our technology in the department is failing us and disadvantaging us. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>Very often. This is a way of filling a gap left by our failing technology. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>There are serious challenges to sharing knowledge ranging from existing management structures, which separate the accountability structures of nurses, medical staff and general workers, prevent appropriate and efficient general management by a single management team. Several of the key hospital management functions, such as procurement, maintenance and transport are located entirely outside of the health sector. The lack of legitimacy and authority of hospital boards eliminates accountability to patients and communities. These soloed operations are creating a serious barrier to sharing knowledge and communicating across departments. |

Time of interview: Date: **02/10/ 2014**
Place: **Kalafong Tertiary Hospital**, **1 Klipspringer St, Kalafong, Pretoria**
Interviewee's position: **(Interviewee M)**
Interviewee's years of working experience: **14 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |

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| 1. | **Can you tell me what your job is all about?**<br>My role as the CEO is to plan, direct, co-ordinate and manage health care and support services effectively and efficiently as an integral part of the health service delivery in the area served by the hospital; and to represent the hospital authoritatively at provincial and public forums. Develop an organisational and management framework for improving the quality of care. I'm also responsible for developing a comprehensive organisational strategy for improving the quality of healthcare. This entails clearly communicating a vision of the organisation, which is reinforced constantly by every means available, keeping the organisation focused on its goals and strategies to achieve the hospital's mission and its strategic initiatives. The healthcare landscape is an ever-changing environment and the crucial part of my role is to provide an innovative environment and a concrete opportunity for our specialised departments and staff to try out new ideas at Kalafong Tertiary hospital |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>The knowledge I have is broadly within the business management and healthcare service delivery. I have familiarised myself with various healthcare regulations and guidelines that are looking at transforming the public healthcare in South Africa and indeed in the Gauteng province. The Department of Health has an overall responsibility for healthcare in the country, with a specific responsibility for public healthcare. The operational structure of a hospital, however, with many business units, specialised clinical departments, employees and physicians, may make the transformation even more important for leading the organisation to operate effectively in the knowledge environment. My knowledge of this environment is to communicate clearly. My responsibility is to keep employees, staff and physicians informed of the hospital's plans, including progress on key initiatives. The transformation of the public healthcare is being reformed in terms of strategy, infrastructure leading towards improved healthcare service delivery. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Hospital's strategies and operational plans are my key areas of operation responsibility. Most colleagues need to know and have regular feedback in terms of how are we doing or what is the progress on strategy implementation and the achievement of objectives. Chief among this is the developments on the national department of health 10-point plan particularly the implementation of the national health insurance (NHI). They would like to know how is the delivery and access to healthcare services for every patient in the province. I do provide feedback as well to my colleagues on changes in healthcare policy from a provincial and even national level so that the employee can align with the new changes. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I studied financial management and advance programme in corporate governance and administration. I then became the CEO of a hospital in the North-West province. I build up |

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| | on my healthcare skills and knowledge by studying diploma in hospital management with WITS and subsequently fulfilled the role of Director: Compliance Specialist with the National Health, Director still with the national department of health and ultimately in my current role. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of my knowledge and experience was acquired through in-house training and certainly on the job training in my last few years as the CEO. The enhancement in my skill and knowledge was also through attending a lot of round table discussion, seminars and conferences on public healthcare system management and developments in healthcare technologies. I have acquired in the past six months a lot of knowledge about the public finance management act as well as the preferential procurement in the public sector. These two areas I find very important in my role as the accounting officer in my role as the CEO. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>The knowledge that I have acquired thus far belongs to me. It is my knowledge and my experience. By that I'm not saying that I do not share it with my staff and colleagues – I do share. What I'm saying is that this experience and knowledge is not documented except in my head. Sure, the department will own the hard copies of all the documents we have in the libraries and electronic documents we have on our computer databases. That is proprietary information. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>The majority of staff shares their experience and knowledge in various forms including using the SMS, Facebook, LinkedIn, emails and WhatsApp. They will probably use their daily interaction in their teams because most of the staff works within teams. This is also more prevalent in the clinical operations where a team of doctors will work with a number of nursing staff. This is team work and in the process of doing their work on the patient, they discuss, share knowledge and make decisions. There are always new things to learn in the wards or operating room. Knowledge often free flows in those environments. The employees also have in their various departments and business units' weekly meetings, one-on-one meetings with their managers and debriefing sessions with healthcare professionals where information and knowledge is shared. I know that our doctors do use the internet, teleconferencing and videoconferencing to liaise with their peers abroad or in other provincial hospital. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I use largely meetings, departmental intranet and email. From time to time, I use electronic notice boards or hard copy memos which are displayed on notice boards in the corridors. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?** |

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| | Documented procedures are, call it compulsory reference documents that enable the staff never to deviate from set standards particularly when dealing with a patient clinical issues. The regular reference to the documented procedure is important in this environment to ensure consistency in recording customer medical information. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>Our hospital is very accommodating to staff suggestions. We appreciate these suggestions for simple reason that, as I have alluded to earlier, we have different and unique cases that we deal with on a daily basis. Therefore, staff members who deal with these cases will forever make different decisions to resolve unique issues facing them. Therefore, we will always have suggestions from staff on how to continuously improve on our services to patients. We are open to different views as well. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Through email, teleconferencing, videoconferencing and through departmental meetings. Given the inadequacy of our ICT infrastructure, these methods are filling the gap. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>We are using various means which I doubt if they are effective. They might not be effective because they are not formalised and they are not guided let alone managed by any HR policy whatsoever. How much knowledge we lose is not very clear. However, looking at the drop-in healthcare service delivery, one could speculate that we have lost a lot of good people and they left with all the knowledge and experience. Is this not what is referred to as the loss of intellectual capital? Yes, we are losing quite a lot of that because we do not have mechanisms or programs to tap into that knowledge. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge is power. I guess there is no one who can argue against that. This is as adage that comes from a long time ago and it is still applicable up to today. I cannot imagine how we can improve OP without acquiring new knowledge. Thus, there is no doubt it that knowledge has a direct impact on improving OP and improving employee. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>No. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Not in my environment no. I cannot however comment about the department of health itself because they have a different culture whereas we have a more professional culture. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?** |

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| | It would honestly be appropriate if we could store information electronically, update it regularly and be able to access it electronically. Unfortunately, we do not have an IT infrastructure developed to do that. We do not have a centralized database where we can store the entire department's information including the hospital information. The biggest barriers are therefore inadequate IT to support business processes and create a platform for the management of information and knowledge. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>We share information very often through hardcopy files or emails. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>There are no challenges at all except the manual and old fashioned way of sharing information. |

Time of interview: Date: **30/09/ 2014**
Place: **Charlotte Maxeke Johannes Academic Hospital, 5 Jubilee Rd, Park Town, Johannesburg.**
Interviewee's position: **(Interviewee AE)**
Interviewee's years of working experience: **18 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My role as the highest management position within the hospital is to work directly with the board of directors to institute strategic planning for the hospital and balancing the day to day operations and handling the strategic development initiatives needed for long term success. My role includes creating a positive and productive culture through leadership; providing and modelling the standards for operational excellence; recruiting and retaining qualified Staff; assuring the delivery of high quality healthcare service and patient care; implementing clinical policies and procedures; ensuring compliance with hospital policies as well as government rules and regulations; developing relationship with internal and external stakeholders; and maintain strong financial performance |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>As an administrator and also responsible for attaining and maintaining patient care, safety, education and community service goals, the knowledge I have about this organisation is ensuring that the hospital objectives are met through the process of selection, development, organisation, motivation, management, evaluation and the promotion of |

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| | human resources. I have also the knowledge about the financial health of this hospital in ensuring financial stability and strength by promoting services in a cost-effective manner. Equally important, the knowledge I have is the knowledge to ensure the hospitals complies with government regulations and operate in accordance with all regulatory agencies and accreditation bodies. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Mostly it will be the key concepts and frameworks that will allow hospital teams to understand the organisation and healthcare industry and leaders and managers to develop a mission, strategy and execution plan that will help achieve the hospital goals. The objective of sharing this knowledge and information through this analysis is to find a mission that: places boundaries on the organisation, energises and inspires the organisation, provide a tangible basis for evaluating the fit between mission and the organisation's action. This knowledge will in most cases serve to charts a path through the dynamics of our healthcare industry that gives us control over our destiny by ensuring our hospital enjoys sufficient prosperity to pursue and fulfil its mission; and guides the decisions about resource allocation, policies and activities that we will have to make on a day to day basis. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>Most of my skills and knowledge I have acquired through my previous role as the CEO of the Helen Joseph Hospital and now my role as the CEO of Charlotte Maxeke Johannes Academic Hospital. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>We have a highly-developed filing and archiving system in our hospital where we keep most of the hospital and patient information. Some of the information is accessible in the Gauteng provincial department and the national department of health websites mainly for healthcare policies and regulations. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>The hospital owns the information which we keep in the file. This information is largely information about patients' records, manuals, procedures and hospital operations information. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>Most of the staff in the hospitals work as teams in every department. The information and knowledge is shared on a daily basis. I would say that they share their knowledge and experiences through working together in teams. We do have debriefing sessions where doctors and nurses discuss various situations they encounter in their day to day activities. The debriefing sessions are a very important forum for sharing knowledge and this is where younger doctors and nurses gains a lot of knowledge about their profession. We |

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| | hold monthly meetings with the department executive management and other hospitals where we discuss experiences and challenges in our different hospitals and in the entire public healthcare system in the province. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I share my own personal knowledge through the translation of hospital's mission and strategy into concrete choices and activities and where the competitive advantage is made or lost. I also share the decisions we made about where to spend scarce resources, including money and time. I share and transfer the knowledge about how routinised patterns of behaviour are undertaken to create and deliver healthcare products and services and articulate the rules and procedures that define the range of choices and behaviour in the hospital. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>We use documented procedure all the time. We do not even wait for a problem to occur. Using documented procedures is critical to ensure that all activities or clinical procedures performed on the patient are carried our properly and well documented. This information is crucial as it form the medical history of a patient for future reference. Therefore, the use of demented procedure will ensure that that information is captured as accurately as possible. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>Our organisation is very open to suggestions and different vies and opinions from staff. Our environment is very dynamic. We are faced with different patients' every day. Therefore, we will apply variations to different circumstances without of course deviating from documented procedures. This is possible through suggestions from our staff working within teams. We therefore always encourage staff to think outside of the box to come up with better ways of doing things. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>It's mostly communicated or transferred through departmental meetings. The heads of the various specialists' departments often meet to discuss collaboration and support issues between departments. Often patients are transferred from one department to the other (casualty department to orthopaedic to X-ray department, etc.). Therefore, the knowledge of hat the other departments are doing in order to make a good decision of where to send the patient to, depending in the diagnosis. All the critical information, doctors' knowledge and assessments are transferred through files for the other doctors or nurses to be able to assist the patients further. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?** |

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| | We tap into this knowledge through team meetings, debriefing session, training and workshops. However, we do lose quite a lot of healthcare professionals who leave with their knowledge and experience. This is very sad. This is one of the challenges we have and has added to the challenges on service delivery. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>I think that knowledge is very important in anything we do particularly in professional services like we are in. Without knowledge and experience I honestly do not see how we could deal with such complex situations as patient diagnosis and patient care. Therefore, the knowledge is critical in ensuring the improvement in the performance of this department and ultimately ensuring the improvement if healthcare service delivery. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>Our staff will normally interact in the social environments like the canteen during their lunch hours or when they are in their sporting activities. But apart from that we do not have adequate facilities for staff to interact and collaborate. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>No. we all share a lot of information and knowledge among ourselves here. I have never come across incidents of staff member being reluctant to sharing information. I'm not saying that it does not happen but never heard of it. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>We still use a lot of manual hard copy filing system. This is cumbersome considering the number of patients that we are dealing with. Sometimes the patients file goes missing for whatever reason – destroyed or misfiled. Therefore, this manual process is a serious barrier. We could do with modernising how we capture this information and store it electronically so that it is secured and is accessible as and when needed. This poor investment in our modern technology is serious barrier to storing and retrieving information. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>This is our daily routine and defined operational process. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>No challenges at all |

Time of interview: Date: **30/10/ 2014**
Place: **Medical Supply Depot, 35 Plunkett Avenue, Hursthill, Johannesburg.**
Interviewee's position: **Interviewee N**
Interviewee's years of working experience: **15 years**

Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My responsibility in the Gauteng department of health is to manage the Gauteng's centralised procurement department for pharmaceuticals, the Medical Supplies Depot (MSD). My job in the medical supply deport is ensuring strict quality control on all medicines destined for the Provincial Hospital Services of the Gauteng province. This is mainly to ensure that all products that are on Government tender and destined for use in the Provincial Hospitals and clinics in Gauteng, comply with the suppliers' and manufacturers' specifications. We monitor generic State and Private pharmaceutical products. This is because while some companies produce dedicated batches for state issue only, most generic pharmaceutical companies supply both the private and public sectors with the same batches of medicine. This also involves ensuring adherence to policy and regulation and compliance with pharmaceutical requirements. The policy sets out the main objectives of Government to ensure quality in healthcare services and to continuously improve the care that is being provided. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>The knowledge I have is more about the pharmaceutical supply chain in the provincial hospital including the challenges they face regarding waste and inefficiency in the supply chain process itself. I have a good knowledge of the inventory management process at the provincial hospitals and the regional healthcare centres and they are fairly ineffective and inefficient. There are also issues relating regular Stock outs, high annual inventory procurement costs, high trade deficits of unaccounted stock and huge amount of expired medication disposed of annually. |
| 3 | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>The knowledge typically sought by most of the colleagues is more on pursuing strategic pharmaceutical supply chain management namely capacity and production planning, facility location and design, logistics networks, inventory management and warehouse management. The regular request for help is in the area of the management of supplier contracts and the distribution of pharmaceuticals to the provinces' hospitals. |
| 4 | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>As a healthcare practitioner, specialising as a Pharmacist, I acquired most of my skills from my previous involvement in various pharmacists' roles including as a pharmacist at |

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| | the north-west department of health and also as a senior manager and head of pharmaceutical services in the Gauteng department of health. In the past six months, the key skills acquired was more about streamlining the inventory management, processes and tendering on the overall pharmaceutical supply chain performance. Of course, there was a lot of training on the whole concept of supply chain management which helped improve my expertise in this filed. |
| 5 | **Where is most of the knowledge that you need to do your work located or stored?**<br>We have internal information management and logistics systems that we use regularly for the management of inventory and delivery of pharmaceutical products to provincial hospital. This is where a lot of information is stored and processed. We also have access to other stakeholders (manufacturers and suppliers) websites where we access and retrieve some information we use to do our work. |
| 6 | **Who owns the knowledge that you acquire in your present job?**<br>The department really owns the information. Most information because it is stored on the systems database, it is only accessible to certain individuals depending on your level of authority. |
| 7 | **How do members of staff share experiences and knowledge in this organisation?**<br>Most of my staff in the department rarely shares experience and knowledge because most of the processes are automated and workflow driven except where there is a process problem which will largely be resolved by a senior manager. Apart from that we have an extensive use of email to communicate among staff and external suppliers and provincial hospitals. But, there is little sharing here. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>As an individual, I do have my management meetings and general staff meetings where I discuss departmental plan and strategy with managers and give feedback to staff about the department's operational issues. At a personal level, I do mentor and coach some of my senior managers and share my work experience and knowledge with them. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>We do have documented procedures and guidelines but we seldom use them unless if we are confronted with a unique and rare situation or problem. Most of our processes although documented, they are automated in the system as well. Our processes are such that there is very little human intervention and less paperwork. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>Fairly open. We do receive suggestions from our staff from time to time which we discuss as a management team. The suggestions are mainly on how we could do things differently to improve the way we do things. The suggestions range from process improvement to |

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| | human resources issues. Staff is free to air their views and opinions because this is natural. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Most of the knowledge is shared and transferred through (emails and intranet). Very little use is made of paper-based memos or notice boards. The most important forums I would say are the meetings and workshops which are very interactive. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>That is a bit of a difficult one. We do not actually. The reason for that is that we do not have formalised human resources practices like mentoring, coaching and community of practices or user groups in the department. I believe that these are the forums where we could tap into the knowledge of the more experienced and knowledgeable staff even before they leave. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge is key in terms of improving not only individual's performance but the OP as well. That is precisely the reason why we insist on regular training and development. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>I am not sure about that. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>No, not at all. What I have noticed is that the staff is forever willing to discuss and resolve complex issues as a team. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>The biggest barrier is the expensive ICT costs of storage and disaster and recovery costs as well and network costs and maintenance. Generally, the cost of ICT is very high. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>We share information very often through our regular meetings and we generate a lot of importation through emails. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>Sharing information with people from other departments does not happen as often as it should to be honest. Firstly, because we have very little in common operationally except that we adhere to the same healthcare policies and regulations and that we have to part of the collective in terms of healthcare service delivery. Perhaps the other areas that we also share operational information are Finance and HR. |

Time of interview: Date: **12/09/ 2014**
Place: **Tembisa Tertiary Hospital, 1 Flint Mazibuko St, Tembisa, Gauteng.**
Interviewee's position: **(Interviewee AF)**
Interviewee's years of working experience: **22 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>I am a medical doctor within Gauteng Department of Health and my job as the CEO of Thembisa tertiary hospital, I must ensure that we provide medical treatment to patients through examination, diagnostic analysis and treatment of any irregular medical abnormalities and illnesses in patients. Once the patient has been diagnosed and the cause of the illness is identified through medical testing where required then I am able to prescribe medication to treat and heal the illness. Where a patient has been admitted into the hospital and I am unable to diagnose the cause for illness then the patient is referred to a specialist within the hospital to further treat the patient. Over and above the patient care, my job is to run the administrative function of the hospital through proper implementation of healthcare regulations and departmental strategies. I interact a lot with the board of hospital trustees. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>I have been with the Gauteng Department of Health (Tembisa Hospital) for 8 years now and what I have gathered thus far is: Hospital culture - the diverse cultures within the hospital have created an environment of togetherness and unity for the benefit of the community; management style - the hospital management has true leadership where there is all direction flow of information, with understanding of the challenges that the staff experience such as working longs hours and platforms for innovation and improvements are welcome from staff members. Areas of red tapes in administration between the department and the government are there and are more political than management issues; the behaviour of the community within which the hospital is based is away from home where staff personnel is respected and welcomed into the society, staff development. The department is committed to developing its staff personnel in order to be current with global developments and to ensure efficiency and effectiveness in service delivery. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>As an administrator and a medical doctor, in order to help foster an open and enabling forum for the communication of ideas, concepts and information throughout the organisation I tend to be welcoming, approachable and open minded. The type of |

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| | knowledge sought is related to daily work assistance with staff members in order to shape a knowledge sharing culture mostly medical related; knowledge transfer related to analysing a complex situation with patients assisting staff member to decision that will not compromise their code of ethics and patients. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I have acquired most of the skills through interaction with staff members, engagements with classmates in other hospital and sharing of knowledge as how other activities with their hospitals are implemented, reference materials such as researches that have been conducted previous and most importantly continuous reading of dealing with medical challenges. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the knowledge is stored within the hospital ICT infrastructure by the ICT department which is responsible for providing the necessary technology platforms for enabling knowledge management. In addition to ICT knowledge is stored in the physical records such as recorded information, research and within the staff personnel themselves. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>I believe that the knowledge that I have acquired is owned by both the hospital and myself as the Doctor because I believe that as a Doctor I am an asset to the hospital, therefore the knowledge gained within me can only be translated and shared with the hospital through the hospital ICT infrastructure and implementation of policies and systems that encourage knowledge recording. Again, I believe that knowledge produced by employees on the organisation time and using the hospital's resources shall remain the intellectual property of hospital and employees shall have no claim of intellectual property rights |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>Experiences and knowledge is shared through knowledge sharing sessions organised by the hospital and with ICT infrastructure such knowledge is updated into databases of good work practices and lessons learned to retain organisational knowledge. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>Through interaction with other staff members by conducting capacity building and awareness to staff reporting directly to me and extending the invite to any other staff within the hospital in interest to gain knowledge. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>I make use of documented procedures only when I experience a challenge and unable to find a solution to the problem. This is a very rare case as some of the knowledge is not as detailed as required in the documented procedures. Reference to previous documented records and research has also assisted in this regard. |

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| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>The organisation policy and procedures are documented in such a way that no time frame is attached to providing opinion. The hospital has established systems readily available to staff members to raise opinions on improvement and direct engagement with supervisors in the case where staff members are not satisfied with the level of service rendered or treatment thereof. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>The knowledge dissemination within the hospital has dedicated knowledge champions at certain levels to ensure that different medical categories of reports are stored and archived in the relevant network drive, database or knowledge management portal within the hospital system and electronic copies of all other documents (e.g. presentations, articles, media statements) produced by business units should be stored centrally on the appropriate network drives / databases/ repository |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>Through undergoing medical workshops offered by the various medical organisation where I interact directly and network with experienced and retired medical experts. The organisation has also established conferences and workgroup to meet on a regular basis as part of tapping into experienced personnel. Requesting that the personnel leaving the organisation or retiring assist with documenting the processes for future reference. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>I believe that a common centralised knowledge system tends to motivate, accelerates learning and assist the team to make an informed decision that ultimately enhance performance. Resolving issues and challenges faster is an indication that the information is easily accessible and readily available to staff to perform optimally. Making knowledge part and parcel of the daily workflow between teams assist in shifting and cultivating a culture of unity and teamwork enhancing better performance. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>Yes, this is through social networks between staff members outside the office environment. In addition to that staff do meeting after work as part of networking and sharing of experiences and challenges, the organisation has also established team work sessions outside the office as part of ensuring that staff member interact and understand the various cultures within the organisation. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Yes, I have. This was a result that staff members perceive that once information is shared with colleagues then their jobs might be redundant but through capacity building and |

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| | awareness such cases tend to be less as a result of communicating the mission and vision of the organisation not for the benefits of individuals but the benefits of the stakeholders. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>Inconsistent and poor maintenance of the ICT infrastructure is the challenge to information storage. In addition to the above failure to implements latest technology in line with global ICT requirements. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>This is done through quarterly management reviews/meeting that is informed by monthly departmental meeting with staff. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>ICT infrastructure, competency and failure to understand what information is of value and interest, commitment to the organisation mission and values. Data integrity and quality in information system is a challenge on the grounds that the data is not accurate enough as a result of data migration until such data in verified. |

Time of interview: Date: **27/10/ 2014**
Place: **Ekurhuleni Health District, West Wing, 40 Catlin Street, Germiston.**
Interviewee's position: **(Interviewee O)**
Interviewee's years of working experience: **18 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My job in a nutshell is to ensure the provision of a comprehensive and integrated package of essential public healthcare services to the citizens of the Ekurhuleni region in the Gauteng province. Primary Health Care is delivered within the district health services and is the foundation of an effective and efficient public health service as it is frequently the first point of contact between the patient and the health service, i.e. it is the gateway to the health service. Thus, efficiencies or inefficiencies at this level impact significantly on the entire health system. To ensure that this happens, I also look at the healthcare policies interpretation, update and implementation as they are amended by the National Health Department from time to time. This also involves ensuring that adherence, compliance and monitoring. The policy sets out the main objectives of Government to assure quality |

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| | in healthcare and to continuously improve the care that is being provided. The policies are designed to achieve the goal of a quality healthcare system and require a national commitment to measure, improve and maintain high-quality healthcare for all its citizens. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>The Ekurhuleni Local Government is the main provider of Primary Health Care in the district with over 95% of the public healthcare clinics belonging to them. It has a Population of 2.9, Million Medical Insurance coverage of 20-25%, ANC HIV Prevalence of 34%, in Coverage at 1 year of 101% and Crude Maternal Mortality Ratio of 202 / 100 000 LB. The department intervention activities include prioritising vulnerable households, screen for risk factors and disease and refer these to hospitals, provide health education and support, provide basic home treatment and provide community based activities. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Ekurhuleni is one of the 25 Districts identified with high Maternal Mortality. Knowledge and assistance requested in this regard include BANC training, ESMOE training, In-Service training (Early Warning Charts, Use of Partogram Auditing of Antenatal and Labour Chart), dedicated obstetrics emergency transport, essential equipment and drugs, review and updating of protocols especially referral protocols and national standardized birth register implemented in the district. Some of the assistance provided is the provision of adequate TOP services to reduce unwanted pregnancies and maternal mortality rate; Staffing in MOUs with all advanced midwives leading the teams; Advocate for procurement of emergency equipment in facilities and transport incubators to provide paediatrics emergency equipment. Colleagues also often seek information and assistance on how to deal with outbreaks of malnutrition and diarrhoea and how to implement implementation of community outreach programme, |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I acquired most of my skills since I was involved with the department of health and social development from 2010. I have also acquired the bulk of my knowledge, skills and expertise through my tertiary qualifications which include a certificate in Municipal Development Programme, degree in Local Government and also diploma in Human Resource Management. I have a good knowledge of this region after serving in this region in various roles. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>A lot of knowledge and experience is found in people who have been with department for a long time and also with people who have experience in the healthcare industry. However, we have a lot of our information that they use stored in our electronic documents in our computers as well as documents and files stored in our filing systems. |
| 6. | **Who owns the knowledge that you acquire in your present job?** |

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| | The documented information is owned by the department and stored in documents and files. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>We hare through meetings, mentoring, training and workshops. We also use and share information through our website and emails. There is informal knowledge and experience sharing outside the formal departmental structure mainly during the community outreach programmes. Informal learning also takes place through daily social interactions such as participation and working alongside others, tackling challenging tasks and working with patients in their communities. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I do a lot of travelling and engagements in communities and clinics. I share a lot of knowledge on primary healthcare and policies with my staff. I share with them what other countries are doing to be successful and deliver good quality healthcare service to their communities. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>We use documented procedures in almost every day of our work. We always follow the local public healthcare engagement procedures. Documented procedures provide information about the documents which contain healthcare legislation and guidelines. Therefore, it is critically important to always refer to the documented procedures on how to implement healthcare practices. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>We are a very open organisation. Staff makes suggestions from time to time mainly to help improve on how we can implement the policies and execute on guidelines to improve service delivery. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Mostly through word of mouth and the use of social media. Also, the uses of departments documents which are often takes a long time or are difficult to access because they are in the department filing system or archives. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>We often contract them back into the department as contractors or temps. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge will forever be important in developing skills and expertise for our staff thereby helping employees to do their work. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?** |

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| | Although we are on formal duty within the communities, this I may look at as informal arrangement where we collaborate and interact extensively as staff. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>No. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>We do not have sufficient computers or information storage that is easily accessible as we are out the working in remote areas. This can be very frustrating particularly when you need to access a certain documented procedure. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>Always and very often. We have weekly team meetings to discuss weekly schedules and to provide feedbacks on projects and activities in the department. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>There are many challenges. My view is that these challenges in information sharing in our department are influenced by the proximity of people to one another and the knowledge of what other departments are doing. Currently, very few employees will know what other departments are doing as a result there is less to share. Leadership should create an environment with programs like job rotation to expose employees to other things that the department is responsible for. |

Time of interview: Date: **29/10/ 2014**
Place: **Gauteng Unit 4 Continuity SA Growth Point Business Park, Cnr Old Pretoria & Tonetti Street, Midrand, Tembisa,**
Interviewee's position: **(Interviewee AG)**
Interviewee's years of working experience: **9 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My role in the department is to render rapid, effective and efficient emergency medical services and non-emergency services in accordance with provincial norms and standards in according. |
| 2. | **What type of knowledge would you say you have about this organisation?** |

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| | The Gauteng EMS, provincially render equitable services that have no boundaries and an improved access and outcomes; we use model of service delivery that enables the most appropriate resources allocation and greater flexibility and doing away with municipal boundaries that exists currently to respond to changing environments and community expectations. The EMS has developed management strategies, which assist in ensuring effective use of ambulance and non-emergency patient transport resources; we have improvement of response times to priority one calls. The EMS provide high standard of care, with early intervention and delivery of patients in the most appropriate facilities. The department contributes to the development of new models of managing ambulance arrival at emergency department and integrating emergency care personnel with the entire spectrum of the health professions (paramedical, nursing and medical). In conjunction with the hospitals around Gauteng, the EMS perfected the bed bureau module for equitable utilisation of available beds in the Provincial hospitals. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Colleagues mostly in hospitals and regional healthcare centre most frequently ask for information about the availability of our ambulance and firefighting services, address and times. We update the emergency numbers so that all the hospital including the public have recent number where they can get immediate assistance. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I graduated with a Master's in Public Management and I have been working with the department of health since 2010. I have acquired most of my skills from my previous assignments within the department as corporate services director, head of strategic projects until I was appointed in 2014 in my current position. I have also attended numerous training courses in the department for providing quality care to patients. I never stopped there but went on international seminars and conferences to improve on the skills and new techniques. I use my knowledge and expertise to run training and workshops for our staff throughout the department and regional healthcare entities. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>We have a very robust and dynamic ICT infrastructure from application, telephony systems, network and storage capability. It is therefore crucial that information is accessible and accurate at all times. The information we need to do our work is stored in an online real-time storage facilities accessible through various medium. We also have a very knowledgeable workforce who is trained not only in healthcare as paramedics but as firefighters and ICT skilled end-users. The way the department acquires and stores this knowledge is central to our ability to perform our work optimally and efficiently. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>The information is owned by the department and the knowledge and experience is owned by the employees. |

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| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>We have weekly meetings and incidents debriefing sessions where staff share their experiences and how they dealt with certain situations. The workshops are equally important because this is where senior and experienced instructor's share on a regular basis knowledge about the EMS services and always emphasising the do's and don'ts, procedures and tactics. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>Through training and workshops. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>We use documented procedures almost every day. We even talk about these documented procedures in our daily debriefing sessions. You see, in our type of work, accuracy and efficiency are crucial because we deal largely with people's lives. So, there is no margin for errors. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>We are very open to new ideas and suggestions. The simple reason being that the situations that we are confronted with every day are very unique. Therefore, sometimes employees have to take a decision on the ground using their own initiatives. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>We are using different medium for communicating, telephone services, two-way radios, network communication, SMS, WhatsApp and all the technology that can enable the delivery of information. Across departments we also use meetings to a large extend and emails. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>I guess the only thing available to us for knowledge transfer is largely training and workshop. With there we hope that enough knowledge is shared from the most experienced staff to the junior staff members. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge is the most important component of informing the decisions that one makes on a day to day basis. In the organisation, knowledge and experience not are they going to help with the improvement in employee performance buy also with the OP. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>I am not sure about that but our staffs do spend their time together quite often. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>No, that does not happen in our environment |

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| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>ICT capacity. We have very old systems running our mission critical systems. More often they fall over and are down for a relatively long time and this is unacceptable. We do not have enough bandwidth and storage capacity to store this massive information that we collect on a daily basis. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>Always and very often. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>There are no challenges at all – we provide a service largely to the public and very seldom to other departments. |

Time of interview: Date: **17/11/ 2014**
Place: **Department of Health - Tshwane Metsweding (Pretoria), 179a Nana Sita Street, Pretoria, 0002**
Interviewee's position: **(Interviewee P)**
Interviewee's years of working experience: **13 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Tshwane Department of Health**

Questions:

| Investigating knowledge management practices in the **Tshwane Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My primary role in this job is to provide primary, secondary health services as well as rehabilitation to the regional healthcare centres. This also involves the enhancement of primary health services by promoting health education and preventative health care through clinics and support programs. My overall responsibility is developing the district health system and rendering comprehensive primary health services. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>Section 24 of the Constitution of the Republic of South Africa entrenches the right of all citizens to live in an environment that is not harmful to their health or well-being. In order to fulfil its constitutional and legal obligations, the Tshwane Health Services fulfils its mandate through highly qualified and skilled environmental health practitioners (EHPs). They provide and facilitate comprehensive, pro-active and need-related services to ensure a safe, healthy and clean environment, thereby preventing and eliminating sources of disease. |

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| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Any work area that is applicable to them to fulfil their duties efficiently. This includes administrative support, financial, human resources and facilities. They are need updates and latest reports on research regarding healthcare best practices and disease control mechanisms around the world. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>My skills were acquired since I was involved with the department of health and social development. I also have a good knowledge of this district after serving various roles. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>We have information that is stored in our electronic documents system as well as documents and files stored in our filing systems. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>The department because all documents I work on are archived. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>Various methods are used for more informal capacity development. Options include, hiring trainers or facilitators to provide in-house capacity development. We also arrange senior staff to do workshops and providing access to e-learning courses or self-directed learning modules. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>By engaging personnel as all levels. Sharing knowledge on primary healthcare and policies. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>Documented procedures are a guideline in all activities and it is imperative to follow them in order to achieve our goals effectively and efficiently and to implement healthcare practices accordingly. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>Suggestions are welcome from staff to help improve service delivery. Positive criticism is important to help grow the organisation. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Documentation that is archived is accessible to other departments on the website to view. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>Backup systems help to retain information or documents worked on by previous employees to benefit those remaining. |

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| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge is key and staff members need to strive to learn more to improve performance. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>No |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>No. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>Lack of resources. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>As often as we possibly can because it is crucial that everyone is on par with all processes and procedures for efficiency and service delivery. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>The challenge would be time as everyone will be busy in their own space to think about what other departments are doing, however measures should be in place so that skills and knowledge is transferred. |

Time of interview: Date: **25/14/ 2014**
Place: **Gauteng Dept. of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee Q)**
Interviewee's years of working experience: **10 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My role is to manage the procurement plans for various user departments and in the process, manage the procurement of goods through the tendering processes. I oversee procurement of goods from bid initiation to the delivery of desired goods. The nature of my |

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| | work demands that I participate in the bid committee meetings in order to identify any risk that procurement of the goods might pose to the company. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>There is a lot on knowledge I know about this organisation but mainly relating to my area of responsibility. All clinical services should deliberate on the essential considerations of Knowledge about Culturally safe service provision, service networks, outreach services, Multidisciplinary teams, Research, teaching and education, Planned and emergency care, Occupational health and safety, Children's services and Rural and remote services. What we also have in the department is that knowledge used by all clinicians is primarily related to the treatment and support of the patients. This require knowledge of the patient's underlying disease process; an understanding of potential clinical sequalae; and specific monitoring and interventions required. Within the department, there are key areas of knowledge that were familiar to and used by both doctors and nurses as they work to support patients. There are areas where knowledge is still lacking and not readily available and that creates a challenge in one way or the other. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Colleagues normally sought knowledge on the Supply Management Policy.<br>Below are various instances when advice is required:<br>- Appropriation of funds;<br>- Initiation of bid processes;<br>- The bid specification stage<br>- The evaluation of tender documents; and<br>- Preparation of reports to be presented to bid committees.<br><br>Appropriation of funds<br>In order for user departments to avoid not spending their allocated budgets, at the stage of appropriating the funds they need to establish if the envisaged procurement timeframes are realistic and all the required goods will be delivered in time to enable the sections to deliver on their financial year targets.<br><br>Initiation of bid processes<br>At the initiation stage, advice is normally required when ensuring that the description of work is in line with the department's business plan and advice is also required when selecting the most relevant procurement strategy.<br><br>The bid specification stage<br>Scope of work; general conditions of contract; specifications and selection criteria need to be in line with the departmental standards and my participation in the bid specification helps in providing advice on the above requirement. Advice is also required when preparing the advert to invite interested bidders. |

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| | The evaluation of tender documents<br>At the evaluation stage the user department often require advice in ensuring that the selection criteria are applied fairly to all bids submitted and scoring bidders on the BBBEE points.<br>Preparation of reports to be presented to bid committees<br>Advice is sought by user departments when preparing evaluation and adjudication reports to ensure that background; purpose; motivation; social implications; legal implications and financial implications are clearly defined. Any implications on the supply chain management policy have to be highlighted at this stage. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I acquired my skills through reading prescripts such as PFMA; PPPFA and SCM Policy. I also acquired my skills through participating in the bid committees. The secretariat prepares agendas and minutes of the bid committee meetings and post on the shared drive for all the committee members to be able to read prior attending the meetings. This then helps in learning to deal with various scenarios. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the information is stored at the departmental library; shared drive and at the archives. The challenge we experience is obtaining information on the current projects as user departments keep their files till the project close out. This deprives the supply chain department the most recent information on the cost of providing similar type of projects and performance of the service provider. This usually leads to poorly performing service providers being awarded more work when this could have been avoided. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>Knowledge for current projects is owned by the user departments on their files, which is not shared across departments. Files for completed projects are kept in the archives room in hard copies but the files are made available to all on request. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>Departmental specifications and Standard Operating Procedures are uploaded on the intranet. Members of staff share their experiences on information sharing sessions. This is normally in a form of presentation by one department and through questions and answer session experiences are shared. The challenge on this set up of information sharing is that it only takes place once a month. Few members of staff save their documents on the shared drive. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>I transfer knowledge by issuing tasks to my team, tasks that will give them on job training. We also choose a topic to research on using the internet, books from the library and then share our findings. |

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| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br><br>During the procurement stage, we refer a lot to standard operating procedures; supply chain management policy so as to ensure that we do not transgress. Past bid committee resolutions are also called upon for guidance. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>There is an application on the intranet where staff members are allowed to make suggestions. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>There is currently a drive for user departments to do everything on SAP, from initiating projects, creating purchase orders, reporting during project execution, preparing payment certificates and closing the projects on SAP. This will help transfer knowledge from department to department. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>Very little is done to ensure knowledge is extracted from employees leaving the Department. Exit interviews are conducted when employees leave but attention is mostly drawn to the working conditions in the department. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>The sharing of knowledge would help in decision makers making crucial decisions within a short space of time. Sharing of information can also assist in reducing expenditure towards the recruitment consultants. Information obtained from various researches and feasibility studies can be shared amongst departments instead of getting consultants to conduct researches and feasibility studies. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>Information is shared informally amongst staff members during breaks at the canteen and also during breaks at trainings. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Staff members are usually willing to share information when they are asked to do so in a form of presentations. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>We have various systems (SAP; Cimmorepx and Project Tracker) available to us to use but due to lack of training these are not used to their full potential. |

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| 17. | **How often do you share information with other business units in the department in formal ways?**<br>Once a month we share knowledge in our information sharing session. On the topic selected for the day, we share our individual experiences. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>Use of systems available is not enforced. Systems have been designed and commissioned by IT but are seldom used by all. |

Time of interview: Date: **20/11/ 2014**
Place: **Mogale City**
Interviewee's position: (**Interviewee AH)**
Interviewee's years of working experience: **19 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My job in the department is to Manage, support and coordinate all health Programmes (i.e. TB, HIV/AIDS, EPI, Mental Health, Non-communicable Diseases, Rehabilitation, MCHW and Health Promotion) for the Westrand District; I also prepare, plan and manage the allocated annual budget; report to different sub-directorates and stakeholders; plan and organise training for NGO support and monitoring; monitor and evaluate the implementation of Programmes in the Westrand District; carry out support visits to the Westrand District sub-districts; and support advocacy and community mobilisation. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>I have the policy and regulatory framework within which the National, Provincial and District health operates. That also includes the strategy and tactical programmes established to deliver on the strategic goals and mandates within the provisions of the National and Provincial Health Policy and Regulatory Framework. I also have key performance areas and their related indictors, including available financial and human resources that I should manage and account for. I also have knowledge of the constraints within which the organisation operates |
| 3 | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>It is both internally and externally. |

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| | Internally:<br>• Available training, career development opportunities and vacancies<br>• Available financial resources and other support resources for planned programmes and projects<br>• Progress/status reports of Projects and Programmes<br>• Planned events and coordination/facilitation activities<br>• Executive Management priorities and goals<br>• Performance of direct reports<br>Externally:<br>• Planned Events & support programmes<br>• NGO support services and initiatives<br>• Reporting on performance of published programmes<br>• Address communities on planned and available community health services planned etc. |
| 4 | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>Mainly informally through collaboration and interaction colleagues and seniors, reading memos, annual reports, executive management directives etc. But also through formal training. |
| 5 | **Where is most of the knowledge that you need to do your work located or stored?**<br>It is in emails, presentation power point, white papers and formal strategy documents, annual reports, management reports, people's knowledge from experience etc. Some on internal websites e.g. HR websites for internal HR policies, Intranet for published annual reports etc. |
| 6 | **Who owns the knowledge that you acquire in your present job?**<br>Generally, no clear owner, except clear cases like HR Policy. Generally, it is thought of collect ownership e.g. Strategy and Executive Goals is owned by Leadership and Senior Management – no specific individual or role. Budget is Finance and Executive Directors etc. |
| 7 | **How do members of staff share experiences and knowledge in this organisation?**<br>Mainly informally through collaboration and informal chats. Collaboration – emails, meetings, events etc. Also, using the Website and official published documents and memos |
| 8. | **How do you transfer your own personal knowledge to others?**<br>In meetings and events, Informal verbal discussions & communications and forwarding of emails |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>Less often, I usually ask someone who might know as my first call. Will sometimes corroborate through documented procedure or policy. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?** |

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| | Less open to new ways of doing things – things are usually top-down. Organisation is more open to external experts' advice and consultants than staff. Staff is also less inclined to air their views openly especially to their seniors. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>More through email and direct calls to colleagues. Sometimes through formal meetings where necessary or memos to make it more formal. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>Not much. Sometimes through their immediate colleagues and team members that they work with but much less formal. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>I think it would be most beneficial in directing intentional activities leading to clear measurable goals. For example, when staff knows what is expected of them or an intervention programmes – they get directed at activities that bring more impactful outcomes. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>It is usually during events and offsite training. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br><br>Plenty, especially if it disadvantages their privileged knowledge-based advantage. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>Most information requires access to computers and internal network – which is not that feasible when one is no sitting at their desk or being in the office. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>Only in formal management meetings and report back sessions – weekly, monthly depending on the circumstances. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>Availability of persons and sometimes conflicting priorities. |

Time of interview: Date: **12/09/ 2014**
Place: **Chris Hani Baragwanath Hospital**, **26 Chris Hani Rd, Johannesburg.**
Interviewee's position: **(Interviewee R)**
Interviewee's years of working experience: **20 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My responsibility as the CEO is effectively a hospital administrators. I am responsible for the day-to-day operation of a hospital in a public healthcare system. To coordinate the actions of all departments and ensure they function as one. As part of my typical duties, I act as liaisons among governing boards, medical staff and departments heads; organize, direct, control and coordinate medical and health services in relation to policies set by a government policies and regulations and board of trustees; recruit, hire and evaluate healthcare professionals, nurses and doctors; plan budgets and set rates for health services; develop and expand programs for scientific research; assist in the education of new doctors in the hospital; develop procedures for quality assurance, patient services, medical treatments, department activities and public relations outreach; and participate in fundraising and community health planning |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>The type on knowledge and skills that I need as a CEO are sharp business skills to handle long-term planning, development of operating objectives and budgets and creation of an overall system for efficient delivery of medical services. I need knowledge to review financial reports, managed care contracts and major expenditures. I also need knowledge to establish and administer policies and ensure they are uniformly understood and all staff in the hospital. As the CEO of a hospital, I must stay up-to-date with new laws and regulations, as well as medical and technological advances. As a leader of my institutions, I must be aware and knowledgeable of the actions and policies of that can affect the workplace and community. My knowledge and interpersonal skills come into use when supervising and mentoring staff, communicating with the community and interfacing with governing boards. |
| 3. | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Colleagues will more often come to me for assistance mainly because one of my responsibilities to ensure that the hospital is running efficiently and profitably. The knowledge they need is mainly on the maintenance of patient care and improving the health status of the community. They would like to know what measure must be put in place for providing cost-effective healthcare and maintaining financial stability in their various departments. Knowledge mostly sought is about the creation of a positive work environment. This is important to my colleagues because a lot of staff turnover as a result of negative working environment can affect the quality of services offered within the |

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| | hospital. Therefore, knowledge about ideas and incentives to retain professional staff and keep the hospital an attractive place to work is often needed by my colleagues. |
| 4. | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I am a qualified medical doctor (General Practitioner), a physician with numerous qualifications in management. My experience spans both the public and the private sector and I was CEO of Tembisa Hospital in my previous role. I have in the past 3 years been the CEO of Chris Hani Baragwaneth Hospital. Most of my skills and knowledge as well as experience were acquired through medical practice, management training on healthcare and leadership of one of the largest hospitals in Africa. |
| 5. | **Where is most of the knowledge that you need to do your work located or stored?**<br>The information and indeed the knowledge to do my work is scattered all over the hospital and in the department. This a bit of a chaotic situation because often information is not even accessible or accurate. We do have the ICT infrastructure that is not very efficient or effective particularly when dealing with the management of information. There are computer applications to support some of the core business processes like Finance, HR and other business processes. However, there is no interoperability among these applications and thus no central information repository where information can be stored, integrated and accessible by all staff from various departments who might need it. The bulk of the information is stored in files which are achieved in the hospital archiving system. This presents huge challenges as everything here is done very manually – and as with any manual system, things are bound to go wrong through human error or negligence. |
| 6. | **Who owns the knowledge that you acquire in your present job?**<br>I assume that information on the hospital's storage infrastructure including documented hard copies in the hospital archives is the property of the hospital. |
| 7. | **How do members of staff share experiences and knowledge in this organisation?**<br>We have various forums like the community of practice, user groups, debriefing sessions, workshops, seminars, conferences, meetings, etc. where experiences, information and knowledge is shared. The sharing of knowledge is considered very important for providing alternative solutions to making optimal decisions. We encourage the culture of sharing knowledge as this can help the organisation to achieve its objectives. |
| 8. | **How do you transfer your own personal knowledge to others?**<br>In monthly EXCO meetings, monthly staff feedback meetings, compile report for the Gauteng Department of Health and the hospital board of trustees. Sharing my personal experience and knowledge will most certainly ensure that I communicate how far we have progressed in meeting our objectives, where the challenges are and what we are doing to resolve these. Yes, I share my knowledge in order to hear views and suggestions from the staff and implement new solution. |

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| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>We use documented procedures in almost everything we do. The documented procedures contain defined processes that guide the staff in performing their work. The documented operational plans give management the guidelines in implementing and assessing the success of our strategy. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>My organisation is very open to staff views and suggestions. We use these as feedback to compare to how we are implanting the strategy and how effective the strategy is. Most importantly we use the different suggestions to improve on areas where the strategy might be falling short or on areas which are not addressed by the strategy. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>As mentioned earlier, we use forums like the community of practice, user groups, debriefing sessions, workshops, seminars, conferences, meetings, etc. We also use whatever our ICT offers like the email, internet, portals, videoconferencing, etc. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>We tap on this knowledge through processes like mentoring, coaching, job rotation, promotions and secondments. These processes help to allow senior and most experienced staff members to impart knowledge and their experience to junior staff members. How effective these are it is very difficult to assess because these programs are not really formalized in the HR processes and thus not evaluated regularly if any at all. We could be losing valuable knowledge with all these senior and most experience staff members leaving as result of natural attrition or moving to better opportunities. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>It is my view that looking at the information explosion and organisations having to operation in the knowledge economy and digitization era, the way we do things have changed and we have to do things differently. To establish long-term competitive advantage, operational efficiency and improving OP from an information and knowledge point of view, it is no longer sufficient solely to have efficient access to internal and external information resources. Today it is a business requirement to efficiently exploit what the business actually knows – not only what it owns. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>Most of the interaction takes place in formal interactions. We do not have informal avenues outside of the office environment – no. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?** |

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| | No - never. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>ICT as I have explained earlier. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>We share information as daily routine in order to ensure that we do the right things and that we are updated in terms of the new things. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>The challenges are not about people not interested in sharing but it is more to do with the environment particularly lack of ICT infrastructure, lack of well define HR processes like mentoring, coaching, reward and incentive schemes for sharing knowledge. |

Time of interview: Date: **16/11/ 2014**
Place: **Gauteng Department of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee AI)**
Interviewee's years of working experience: **9 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My job is to promote provincial department of health's corporate identity and Provide strategic support and coordination of departments communication and provide media relation services, communication and branding, research and content management and community and stakeholder liaison. I am also the spokesperson of the department so to say. I am also responsible for drafting and implementing the department communication strategy. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>It is important to know the department's political and operational mandate. This is effectively the role that the department is playing in the context of public services delivery. I understand the department's business strategy and operational plans, objectives and deliverables. Equally important is to understand government communication protocol as well as how and when to liaise with all the stakeholders particularly the customers and the media. |
| 3 | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?** |

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| | It is essential that colleagues are constantly informed about the department's work, government work and empowered to take active part in it. The departments need to make an effort to continually counter insinuations that government work is secretive whenever and wherever they surface. Most of the information requested from colleagues is on healthcare policy, information on policy and regulations updates as these do occur very frequently during the year. The healthcare policy and regulation changes taking place in our country's healthcare systems needs to be communicated regularly to the internal staff and to external stakeholders as well. |
| 4 | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I acquired in the past six months most of my skills on the job training at the department of public services and administration. I also spend a lot of time with colleagues in other departments who are doing a similar job. |
| 5 | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the information is stored in the department computers and accessible to all staff on a need to know basis. The department's policies and strategy documents exist in both hard copies/printed form or soft copies on our website. However, knowledge itself is a matter of experience and that I will find from more experienced staff members who are senior and have been with the department for a bit of a long time. We also obtain a lot of information from national department who inform us regularly about any changes and amendments to healthcare polices and regulations. We do also a lot of interaction and research with stakeholders in the healthcare system both locally and internationally. |
| 6 | **Who owns the knowledge that you acquire in your present job?**<br>My view is that it is owned by both the department and the individual. The information is owned by the department, it is the property of the department and there are department policies that governs the management and use of the department's information. However, the knowledge which is the know-how is owned by the individual who has to execute the policy. For example, the knowledge of a medical doctor practicing at a hospital has and owns the knowledge to do his/her job. |
| 7 | **How do members of staff share experiences and knowledge in this organisation?**<br>Business use different ways to share their experiences and knowledge.<br><br>How staff share knowledge and information through meetings, training and workshops. The most regularly used method of sharing information is through our internal website and emails. Some of the sharing is the general communication from my department. There is some pockets of informal knowledge and experience sharing among employees outside of the formal departmental structure through daily social interactions that fills the gaps., |
| 8. | **How do you transfer your own personal knowledge to others?** |

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| | I communicate to both staff and external stakeholders on a daily basis. What I communicate is a combination of both information and knowledge based on my experience of the environment. This happens largely through newspapers, digital media, radio and television. Sharing knowledge is informal but it's also more robust because we do it constantly and more often without us being aware of it. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>I use them from time to time. But it is also critically important to always refer to the documented procedures on how to implement healthcare practices, follow certain communication protocol, etc. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br><br>The organisation is not as open as I would have loved to see. There is very little feedback in terms of suggestions and new ideas. This I guess it's the nature of the organisation we are working for – government. The misconception that prevails is that the more senior you are in the organisation the more knowledgeable you are – thus staff at junior levels, the staff have resigned to the view that they know very little therefore, there is not much of a suggestion they can contribute to the way we do things. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Knowledge is mostly communicated or transferred through making information available on the electronic media (emails and intranet). Also, the use of departments documents which are often inaccessible because they are managers' offices. There are also training and workshops which our staff do attend from time to time including regular meetings. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>This I guess is a general problem not only in the department but in government as a whole. For example, when transformation was implemented, the majority of our white staff who were very experienced and had a lot of knowledge, left with their knowledge. This trend is still continuing to date. Currently, we even have employees who are older and more experienced being offered packages to take early retirement mainly to make way for younger black employees. The best we can do to tap into this knowledge is to sub-contract these former employees back into the department and often at very exorbitant prices. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge is power – that cannot be disputed. In my view, if the department or any organisation for that matter does not have a knowledge workforce, it is bound to fail to improve its OP. Therefore, the impact of this will most often be lack or lack of employee performance. Poor employee performance will lead to general department poor performance. |

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| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>I am not sure about that – but I do not think that we do. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>Yes quite a lot. This is also a general problem in government where people would rather keep information to themselves. Either because they know very little or they are not too sure what is confidential and what is not. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>Our biggest barrier I would say is lack of transformation as an organisation. We still have very old school and conservative management styles that does not recognize transparency and openness. Also, poor tools and technology are the biggest barriers to sharing, transferring and storing information. Yes, as government we are lacking far behind in grasping the digitization era. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>Always and very often. This is precisely my role within the department to ensure that all stakeholders and staff are informed, issues are clarified or put into context. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>I believe that as a department and as government we still have many challenges. As I have mentioned, the public sector in general is a very conservative environment that has no capacity to embrace change. It is highly politicised, bureaucratic and protocol driven. The government department are run on policies and regulations and have not adopted the business processes and ethics. My biggest gripe is that often we appoint to senior positions people with no experience or qualifications whatsoever but simply because they have a certain political affiliation. |

Time of interview: Date: **12/10/ 2014**
Place: **Gauteng Department of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee S)**
Interviewee's years of working experience: 1**8 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |

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| 1. | **Can you tell me what your job is all about?**<br>My job under the coverage consists of some elements of:<br><br>- Professional engineering work in civil engineering, electrical<br>- engineering, mechanical engineering, biomedical engineering, environmental engineering and safety engineering at the departments healthcare centres;<br><br>- Managing a hospital engineering program which includes professional engineering review and direction of assigned professional and technical programs; and<br><br>- Management support and assistance in developing hospital-wide policy, procedures and resource allocations, especially in professional engineering matters.<br><br>By and large, my job responsibilities are to supervise and directs the maintenance staff and monitors the performance of their assigned responsibilities at various hospitals and regional healthcare centres. I perform and/or directs all maintenance department service requests', ensuring that the work performed is accomplished efficiently with a minimum amount of disruption, inconvenience and with adequate clean up. Checks malfunctioning equipment in hospital and clinics and ascertains corrective action required to restore to satisfactory operating condition and help facilitate root cause analysis.<br><br>Part of my responsibilities is to provide training and supervision aimed at expanding the capabilities of the operations staff. Specific duties include but not limited to:<br><br>- Demonstrating the proper use and care of tools and instruments, giving hands on instruction in basic maintenance, safety and troubleshooting procedures, recommending relevant outside engineering courses for enrolment and instilling an overall level of professionalism in manner and appearance.<br>- Supervises and implements the preventative maintenance program. Specific duties include but are not limited to: scheduling of preventative maintenance with a minimum disruption of building services, performing and/or delegating preventative maintenance tasks to the appropriately qualified maintenance staff member, orders parts and equipment required for repair, maintenance and installation of new equipment and facilities and maintains inventory.<br>- Directs the performance of contracted maintenance work as needed. Specific tasks include but are not limited to: ensuring the timely performance of maintenance contract work, overseeing the fulfilment of equipment warrantee obligations by the installer and securing equipment manuals and drawings from the installers/contractors.<br>- Complies with departmental policy for the safe storage, usage and disposal of health hazardous materials. Maintains a clean and safe workplace.<br>- Recommends and estimates facilities repairs and improvements for inclusion in the annual budget.<br>- Ensures the availability of an adequate operating inventory of tools and supplies. Specific duties include but not limited to: Preparing and submitting purchase order requests, developing sources for stock materials and performing periodic checks for supplies. |
| 2. | **What type of knowledge would you say you have about this organisation?** |

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| | I have an extensive knowledge of the department's hospitals and regional healthcare centres healthcare installations; repair and maintenance of all base building and critical system machinery and equipment. I have a broad based professional engineering and highly interrelated managerial knowledge of this environment. I also understand that successful execution of these responsibilities has major impact upon the outcome of patient care delivery at the hospital. |
| 3 | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>Mostly it will be professional engineering matters at the Hospital. I receive administrative direction with assignments in terms of broadly defined missions or functions and the implementation of the hospital's capital improvement program. I also receive request periodically to reviews major utility systems and associated equipment to assure compliance with regulations, operating standards and ability to meet medical needs. Apart from these, most of the help required by colleagues is on full functioning and training of staff on the utilisation of tools and equipment's. Some of the machines are very sophisticated and they require specialized training - we then arrange in that regard external expertise (Contractors and Suppliers) to come in and provide training. |
| 4 | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>Most of the skills acquired in the past six month is just the application of my experience and knowledge. I however spend some time in workshops and conference where we discuss new technologies and new maintenance processes that have proved successful in similar organisations. |
| 5 | **Where is most of the knowledge that you need to do your work located or stored?**<br>Most of the knowledge is the application of the training that we go to from time to time or extensive interaction/training from our suppliers. We hold internal workshops amongst staff to share experiences of difficult situations that we had to deal with from time to time. I would say that apart from the information (published classification for specific engineering series, manuals and procedure) stored in our files or computer, we share knowledge among ourselves |
| 6 | **Who owns the knowledge that you acquire in your present job?**<br>That's very difficult in that more of what we do is knowledge about the tools, machinery etc. and either you are trained to do that job or not. I would say that most of the knowledge is within the people themselves in the form of experience in these fields. Therefore, knowledge is owned by the people and it's in their heads. |
| 7 | **How do members of staff share experiences and knowledge in this organisation?**<br>Meetings, training and workshops. But the big part of sharing of experience happens on the work floor where employees deal with complex maintenance problems on the ground. This is where the expertise is shared and transferred. |

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| 8. | **How do you transfer your own personal knowledge to others?**<br>Knowledge sharing in my view is important for us as an organisation to create pockets or excellence around the organisation. Therefore, to that extend I always invite supplier to give us presentations about new technologies or products. I do also do presentations and run workshop on various aspect of my job to internal staff. I also use discussions and "story telling" describing a similar experience whereby a method or technique was developed or used to solve a problem. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?**<br>We often use a lot of manuals for the maintenance of our equipment and tools. Although, we also use of electronic mail (e-mail) to communicate to suppliers, user groups and among ourselves to find solution to problems that we might not necessarily have a solution to. Documented procedures also provide information about the documents which contain healthcare legislation and guidelines. Therefore, it is critically important to always refer to the documented procedures on how to implement healthcare practices. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?**<br>Our environment is very open in terms for new ideas and suggestions. Our environment is such that we encounter different problems and issues all the time to such an extent that a known solution might not necessarily apply to the situation confronting you at that time. Therefore, suggestion of possible solutions is always welcome. |
| 11. | **How will you describe the way knowledge is transferred between departments?**<br>Like I said in your previous question, we share knowledge through interaction and talking among ourselves. Also, knowledge is mostly transferred through the electronic media (emails and intranet) and the use of department's documents. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?**<br>We normally use secondments and handover processes when staff have resigned. However, this might not be as effective because we are restricted by time (1 month). Therefore, unfortunately we lose quite a lot of good people as they leave with without having learnt enough from their knowledge and experience. |
| 13. | **What is your opinion about the role of knowledge in improving performance?**<br>Knowledge like experience and skill is very important to execute on the important task we have. Without knowledge, it will be difficult to make decision that we are faced with on a daily basis. Lack of knowledge is detrimental for our organisation as it is because we have employed a lot of young people who are still very inexperience and lacks knowledge. The impact of that is poor employee performance which will lead to general department poor |

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| | performance. Therefore, the role of knowledge in improving performance in the department is crucial. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?**<br>No, we don't. Our staff is more scattered all over and we do not always or necessarily have an opportunity and facility where we engage socially to collaborate and interact. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?**<br>No, not all. Not in our environment. Most if not all of our staff here is willing to share and learn from others. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>I cannot think of any barrier at the moment because we do have access to all the document we need. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br><br>All the time in meetings and workshops. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>The only challenge I could think of is that we do not necessarily spend a lot of time in one place as a result we do not really interact that much with people from other divisions. |

Time of interview: Date: **04/11/ 2014**
Place: **Gauteng Department of Health, Central Office, 37 Sauer Street, Marshall Town**
Interviewee's position: **(Interviewee T)**
Interviewee's years of working experience: **15 years**
Description of project: **The improvement of OP and healthcare service delivery through knowledge management practices in the Gauteng Department of Health**

Investigating knowledge management practices in the **Gauteng Department of Health**

Questions:

| Investigating knowledge management practices in the **Gauteng Department of Health** | |
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| No | Question and response |
| 1. | **Can you tell me what your job is all about?**<br>My job is to manage and coordinate the administrative functions in the Office of the HoD; Co-ordinate meetings with stakeholders / institutions; Accompany the HoD to meetings, visits and other engagements as and when required and ensure adequate research and briefing to facilitate meetings of the HoD's obligations; Promote sound financial management within the areas of responsibility in as far as budgeting and expenditure for |

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| | the Office of the HoD is concerned; Promote efficient service delivery to all clients; Develop, manage and maintain efficient linkages between the Office of the HoD and all internal and external departmental stakeholders; Design, develop and maintain an orderly and efficient system of reception, administration, office information system and archives in the Office of the HoD; Receive, acknowledge and channel correspondence relating to the Office of the HoD, to relevant components for attention, pend and make follow-ups where necessary; Facilitate the gathering of information and prepare and submit reports as required; and Supervise other staff. |
| 2. | **What type of knowledge would you say you have about this organisation?**<br>The knowledge I have about this organisation and bout the office of the HoD in particular is the political mandate of the provincial department of health. The other important knowledge is the stakeholders' information particularly those that support the department in terms of the mandate implementation and execution. The other critical knowledge I have about the department is the department's strategy and operational plan 2013/2016 as well as the department overall budget information. The knowledge of provincial and national healthcare regulations and policies is another set of knowledges that is very important to have. The other knowledge that is helpful is knowledge of government protocol. |
| 3 | **When colleagues ask you to help satisfy their knowledge needs, what type of knowledge is typically sought?**<br>The colleagues will mainly ask about the HoD schedule and engagements in different areas of healthcare within the Gauteng province. They will also ask about information and updates on the approvals of budget, business plans, operational plans and all other administrative issues that falls under the responsibility of the HoD or within his delegation of authority. |
| 4 | **How did you acquire most of the skills and expertise that you have been using in your job over the past six months?**<br>I have acquired most of my skills through various training programs. A learning framework for management of the office of the HoD was developed and the DPSA used this framework to ensure that critical skills and knowledge is established for personnel who are going to run the office of the HoD. Some of the expertise acquired in the past six months was through public administration workshops and interactions with my counterparts in various departments. |
| 5 | **Where is most of the knowledge that you need to do your work located or stored?**<br>The information that I use for my work is filed in my office and on both my desktop and laptop. I keep other information in my office file in cabinets for confidentiality and ease of access. |
| 6 | **Who owns the knowledge that you acquire in your present job?**<br>I do because this is the experience I have acquired and it is not captured or documented anywhere. It is within me or in my head. If I leave I leave with it. I guess the information |

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| | that belongs to the organisation is that information that is on files in the department premises. |
| 7 | **How do members of staff share experiences and knowledge in this organisation?** How staff share knowledge and experience will depend on the management practices and business process in each department. Other business units like hospitals and regional healthcare centres will tend to share knowledge and expertise more often and openly unlike the office bound staff who will tend to keep to themselves. However, there are also regular meetings with departments and across business units where staff share their knowledge and experiences This could be through meetings, mentoring, training and workshops. The most regularly used method of sharing information is through our internal website and emails. |
| 8. | **How do you transfer your own personal knowledge to others?** I share information either through emails for external stakeholders or on the department website or intranet for internal staff. |
| 9. | **How often do you make use of documented procedures to do your work when you encounter problems?** I use documented procedures from time to time. They are important for reference when I'm uncertain about some processes. |
| 10. | **How open will you say your organisation is to suggestions from staff, especially when they air their opinions?** There are suggestion boxes available for staff in the department for new ideas or even for whistleblowing. The department does encourage staff to share new ideas and suggestion. |
| 11. | **How will you describe the way knowledge is transferred between departments?** As I have mentioned earlier, Knowledge shared and transferred through the electronic media (emails, internet and intranet), training, meetings and workshops. |
| 12. | **How do you tap into the knowledge of those leaving this organisation or retiring from it?** For the staff leaving the department particularly those with experience and valuable knowledge, we contract them back on a fixed term contracts. |
| 13. | **What is your opinion about the role of knowledge in improving performance?** Knowledge empowers the employees to add value in what they do. So, there is no doubt that knowledge does improve to general department performance. |
| 14. | **Is there an informal avenue outside the formal office environment for staff to collaborate and interact?** We do not have internally facilities for outside of the formal office environment. |
| 15. | **Have you experienced a situation where a staff member has been reluctant to share knowledge?** |

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| | Yes, you do find that from time to time particularly for those employees who deals with confidential information from HR, Finance and procurement. |
| 16. | **What is the biggest barrier to your being able to store information that you receive efficiently and effectively?**<br>Our biggest barrier management styles which is still by far very conservative in nature. We do not have modern technology where information could be stored centrally ad readily available and accessible to staff. |
| 17. | **How often do you share information with other business units in the department in formal ways?**<br>I do that all the time when updating the staff with the quarterly feedback and reports on the achievements of objectives and targets from the operational plans. |
| 18 | **What are the challenges in sharing information with people from other departments or divisions?**<br>The problem we have is that there are too many disjoint business units who are still operating as silos. This is mainly because there is a mixture of healthcare professional like doctors, nurses etc. on one hand and the general administration and support business units and department. The other challenges are also that the regional healthcare centres are far from each other and from the head office. |

Adapted from: Creswell (2007: 136)

## Appendix O: First Language Editor – Dr Karen Batley

**Dr Karen Batley**

BA (Hons), BEd, UED (UCT); MA (UP); D Litt et Phil (Unisa)

**Academic and language practitioner**

2015-11-02

To whom it may concern

By agreement, in my professional capacity, I was responsible for editing the text of the doctoral thesis by Mr Kgabo Badimo. This did not include the list of references. Chapter Four was edited by Ms Audrey Williams (professional editor).

Karen Batley (Dr/Ass. Prof)

Dr Karen Batley
(Academic & Language Practitioner)
082 415 6650
Office :(012) 341 9217
Fax: 086 536 2340

## Appendix P: Second Language Editor – Marielle Tappan

30 March 2016

To whom it may concern:

I hereby state that a language edit was done at the behest of **KGABO HENDRIK BADIMO** for his thesis "IMPROVEMENT OF ORGANISATIONAL PERFORMANCE AND HEALTHCARE SERVICE DELIVERY THROUGH KNOWLEDGE MANAGEMENT PRACTICES IN THE GAUTENG DEPARTMENT OF HEALTH".

The full paper has been edited and is, to the best of my knowledge, correct and grammatically sound.

Regards

Marielle Tappan

Editing | Photography | Design | Social Media Strategy

072 474 1158 | mteditorialinfo@gmail.com

MT Editorial